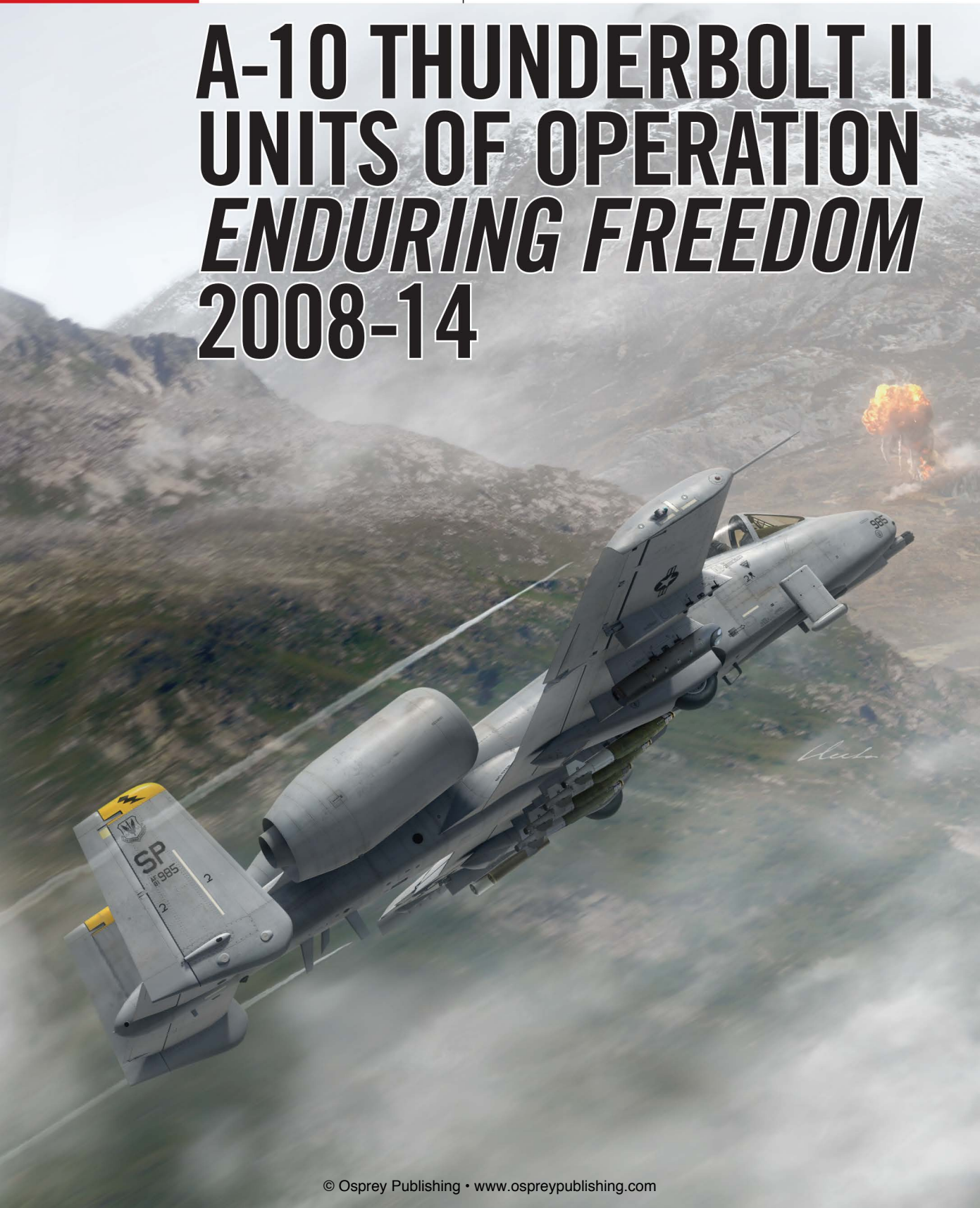
COMBAT AIRCRAFT 111

Gary Wetzel

A-10 THUNDERBOLT II UNITS OF OPERATION *ENDURING FREEDOM* 2008-14



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INTRODUCTION

As this book was being written in the autumn of 2014 it was made public that the US Air Force (USAF) had once again decided to retire the A-10. It is no secret that the service never wanted the 'Hog'. No measure of success over the battlefield could ever redeem its forced entry into the USAF, and the ability of Congressional lawmakers to repeatedly out-manoeuvre USAF and Department of Defense decision makers is perhaps the only reason the aeroplane has reached the 21st century still very much in active service.

My two *Osprey Combat Aircraft* volumes on the A-10 in Operation *Enduring Freedom* (OEF) could not have been written without the commitment and willingness of the 'Hog' pilots to tell me their stories of combat in Afghanistan. For their time and patience I am most grateful. Their combat accounts were frank, entertaining and insightful, and will probably never be repeated again. Thanks to Lt Col Drew 'Baker' English, Brig Gen Thomas 'Big' Deale, Lt Col Stephen 'Bitch' Otto, Lt Col Joshua 'Bondo' Rudell, Col Brian 'BT' Burger, Brig Gen John 'Buster' Cherrey, Lt Col Anthony 'Crack' Roe, Lt Col 'D-Ray' Rayman, Lt Col 'Frag' Haden, Col Michael 'Foot' Millen, Maj Jeremy 'Frogger' Stoner, Capt Aaron 'Geezus' Cavazos, Maj Eric 'Gopher' White, Maj Christopher 'Metro' Cisneros, Lt Col Thomas 'Narly' McNurlin, Maj Thomas 'PETA' Harney, Lt Col Mike 'Pony' Lowe, Capt Aaron 'Puff' Palan, Maj Joseph 'Rudy' Hext, Lt Col Michael 'Scud' Curley, Capt Chris 'Slug' Palmer, Col Kevin 'Stubby' Campbell, Maj Ruston 'Trombone' Traynham, Lt Col Paul 'Zucco' Zurkowski, Capt James Chevalier and especially Lt Col Robert 'Muck' Brown. I can only hope to have done your stories justice.

I would also like to thank my family – Stef, Carsten, Jamison and Madison – for their continued support with this project.

Gary Wetzel
Phoenix, Arizona
January 2015

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CHAPTER ONE

MAKING THE BEST EVEN BETTER

The first 'Hog' to be modified into an A-10C was 81-0989 of the 40th Flight Test Squadron at Eglin AFB. The aircraft made its first flight on 20 January 2005 from the Florida base, although it is seen here a long way from home at Nellis AFB in early 2009 *(Gary Wetzel)*

The A-10A Thunderbolt II was going to be left behind. Never known for its advanced technology, the 'Hog' was scheduled only to last until 2018 in its post-Operation *Desert Storm* configuration. Low-altitude safety and targeting enhancement (LASTE) was supposed to be the last major upgrade for the jet, and that was put in place as the aircraft returned from Saudi Arabia in 1991. After that there was no major upgrade planned for the A-10. As the USAF pursued the further advances in technology that had been demonstrated in *Desert Storm*, the A-10 was not to be one of the principal beneficiaries of those advances.

Prior to LASTE, the ability of an A-10 to pinpoint a target entirely depended upon the pilot's skill, as Lt Col James Marks explained;

'When I flew the A-10A in Europe back in the 1980s, you were lucky if the old inertial navigation system [INS] fitted in the jet got you to within a couple of miles of the target due to its propensity for drifting. That was where you made your money as an A-10 pilot, employing effective clock-to-map-to-ground skills. You knew the terrain, which meant that the INS was just a reference point that might get you close to the target. It would get you to the ballpark but it wouldn't get you to home plate. You had to

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become very adept at knowing the roads, hills and valleys. INS gave you some corrections for weapons delivery but not a computed bombsight. LASTE gave us computed bombing, a radar altimeter and autopilot. The A-10 became quite precise as the "death dot" in the HUD [head-up display] made things a lot easier.'

Although LASTE had been a success, the A-10 was going to need an additional upgrade if it was to see another decade of service. In 1997, six years after *Desert Storm*, a modernisation was first proposed, and Lockheed Martin was awarded a contract to become the prime contractor and systems integrator. In 2001 the company was awarded another contract, this time for engineering and manufacturing development of the Precision Engagement (PE) modification programme that would ultimately produce the A-10C.

The PE programme would deliver a number of changes to the A-10. The single television monitor in the cockpit for the infrared AGM-65D Maverick missile would be removed and two 5 x 5-inch colour multifunction displays installed in its place. The addition of a HOTAS (hand-on-throttle-and-stick), new computers, improved power systems and a Mil-Std 1760 databus also meant that new weapons like the GPS-guided Joint Direct Attack Munition (JDAM) could now be employed by the jet. Add a current-generation targeting pod and a data link, and the post-PE A-10 would be among the most technologically capable aircraft in the USAF's inventory, even if the service had never wanted it.

However, the PE programme was nearly derailed by the 1995 Base Realignment and Closure (BRAC) committee move to close McClellan AFB and its Sacramento Air Logistics Center. The jet's System Program Office (SPO) had called McClellan AFB home since the aircraft had first entered service in 1976, and the engineering expertise (primarily civilian) required to work on upgrades and keep the jet operational had built up here over the ensuing 25 years. Upon McClellan's closure in 2001, the A-10 SPO moved to Hill AFB, in Utah, but the expertise did not. This immediately created a vacuum in know-how when it came to pushing through the PE programme.

Frustrated by the situation at Hill AFB, and the slow progress of the PE programme, the Air Force Reserve (AFRes) and Air National Guard (ANG) had launched the A-10A+ project that would bridge the gap between the A- and C-models. It hoped that such an upgrade would fit its needs and budget. A proof of concept was initiated in 2002, pushed forward by the desire to include the A-10 in initial planning for combat operations in Iraq. The main goal of this programme was to make the jet compatible with a targeting pod. Such a system would give the pilot the ability to search for targets further than his eyes could see, even with the assistance of binoculars. Two units, the 118th Fighter Squadron (FS)/103rd Fighter Wing (FW) of the Connecticut ANG and the 131st FS/104th FW of the Massachusetts ANG, pushed the envelope as far as integrating a targeting pod with their A-10As.

The key to integrating the targeting pod – in this case the AN/AAQ-28 Litening II – was the A-10's adaptive interface module (AIM). Maj Thomas McNurlin would end up running the A-10A+ programme, and he explained how this process occurred;

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One of the first A-10s to receive the PE upgrade, 79-0169 of the 422nd TES departs Nellis AFB on an early mission to test the aircraft's systems on 9 February 2006 *(Gary Wetzel)*

'The ANG was in a hurry to get a pod on the A-10 as the immediate goal was to use the A-10 in western Iraq. By attaching a pod to the AIM, and after running a few cables, the jet thought it was still talking to a Maverick missile and the pod thought it was talking to a Block 30 F-16. The cables allowed navigation solutions to be passed back and forth, which meant that the pod could determine where it was in space, thus allowing it to generate coordinates.

'At this point Lockheed Martin was saying there was no way to install a pod without building the A-10C, but the Reserve Guard Test Center basically said, "Oh, really?" The latter entered into a relationship with Northrop Grumman, and engineers from both the test centre and the company put it all together. When all of this started to prove worthwhile, Air Combat Command [ACC] decided to forgo the standard fielding process, put the capability on the jets and deploy them with it. It was a temporary modification to the aeroplane that was ultimately unsustainable. Basically, it was a technology demonstrator that ended up going to war. What the ANG and AFRes needed was a long-term solution to securing a targeting pod capability outside of the AIM without having to wait for the A-10C.'

As the ANG and AFRes programme for the A-10A+ began to move forward, overtures to Lockheed Martin to support it fell on deaf ears. An attempt to work with TRW Aeronautical Systems was also abandoned as a result of pressure from Lockheed Martin. Raytheon Indianapolis was the next potential suitor for the A+ programme, and its engineers worked closely

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with ANG and AFRes personnel to fully integrate the targeting pod with the A-10. A moving map display was added in the cockpit and the Maverick television monitor replaced with a better display for viewing images captured by the pod. The software for the system changes lived outside the A-10's operational flight programme (OFP), and this separation allowed for as many as four software updates a week that did not interfere with the Hog's OFP.

A look into the cockpit of an A-10A. The dominating feature is the television monitor (upper right), while the remainder of the dials and instrument readouts are typical of military aircraft designs of the early 1970s *(USAF)*

It took just over a year for the A-10A+ to move from first flight to operational deployment, with much of the flight testing being conducted at the ANG/AFRes Command Test Center (AATC) in Tucson, Arizona. The A-10s being put through their paces by the AATC were on loan from the 47th FS, a reserve unit located at Barksdale AFB. At times there were three 'Hogs' operating from AATC, although most of the testing was completed by just two jets. The AATC A-10s were referred to as 'Frankenhogs' due the modifications that were constantly being applied to them.

Even though the A-10C PE programme was running in parallel with the development of the A-10A+, and it would soon be widened in scope to include the whole 'Hog' community, the ANG and AFRes continued the push to improve the combat capabilities of their jets as expeditiously as possible, as Maj McNurlin recalled;

'The first units to get the A-10A+ would be the Idaho ANG at Boise, the Pennsylvania ANG at Willow Grove and the AFRes A-10 units at Barksdale AFB. Half the A-10s in the Guard and Reserves were slated for the initial cadre of jets to be upgraded as part of the C-model conversion. The other half was at the very end of the modification line, so what we did was target those jets that would be last for the C-model upgrade and push them to the front of the line to become A-10A+s. That way, the Guard and Reserve had most of the important flying and fighting capabilities in their upgraded aeroplanes, although not the full mission integration of the C-model. However, all of their A-10s had improved baseline capabilities.

'In the summer of 2007 the Pennsylvania and Idaho ANG units were sent to Iraq, which marked the first time either A+ or C-model jets had undertaken a combat deployment. The following year, three A-10A+ units combined to deploy to Afghanistan, including aircraft from Whiteman AFB that featured the final upgrades for this version of the jet. The latter included a mission software tape that gave the jet full HUD integration of the information collected by the new systems. By then the A-10A+ featured most of the upgrades installed in the C-model, although it lacked the digital stores management system that allowed the A-10C to carry JDAM. That was a sacrifice we were willing to live with.

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In contrast to the cockpit of the A-model 'Hog', the A-10C cockpit features a number of updates that have truly revolutionised how pilots operate the jet. The single television monitor for the infrared AGM-65D Maverick missile has been removed and two 5 x 5-inch colour multifunction displays installed in its place. The latter dominate the instrument panel, as does a new control-column grip and right-hand throttle to provide true hands-on-throttle-and-stick (HOTAS) fingertip control of systems and the targeting pod *(USAF)*

When you're working on the cheap you can't afford to start adding weapons, as that is when things start to get very expensive very fast.

'We added three computers and a ton of capability that produced a lot of situational awareness [SA] for the pilots. We put out three full mission software tapes and upgraded 102 A-10s for just $18 million. This figure included development, installation and all of the contract logistics support.'

PROGRAMME PROBLEMS

As previously noted, while A-10A+ upgrade jets were rapidly being fielded by ANG and AFRes units, the A-10C PE programme was not running as smoothly as hoped. There was no doubt that Hill AFB was inhibiting growth of the programme through incompetence, while the business approach adopted by Lockheed Martin seemed to be working for no one except the manufacturer. The 422nd Test and Evaluation Squadron (TES) at Nellis AFB was in charge of clearing the C-model for frontline service, but because it was an ACC unit it could not alter the way the programme was being managed. This would change during a meeting at Wright-Patterson AFB in 2005 when senior personnel from Air Force Materiel Command (AFMC) announced that they were taking control of the programme. There was now no chance that the A-10A+ would have more capability than the A-10C. Almost immediately the early requirements for the C-model were rewritten and Wright-Patterson moved fully behind the programme.

'Senior officers at Wright-Paterson instructed us to tell them what we needed, and they would find the money and we would go from there', explained Maj Drew English, the 422nd's PE programme manager, 'and that is what they did. We would go to a meeting with Lockheed Martin and they'd give us an update and we'd say, "No, that's not what we want." Their response was, "Well, the software is already written and to redo it will cost more money. So we'd have to go back to Wright-Patterson and ask for more money. This went on for about a year, and we were finally saying, "This is stupid! This doesn't make sense. Why are no pilots engaged with the engineers on a weekly, if not daily, basis?" We wanted to have continual input, so that when an update of software design came out we knew what it would look like.

'Things finally improved with the release of the Situational Data Link [SADL]. Lockheed Martin hit a home run here because they bought into this concept and process where they allowed us to go straight to their engineers and make changes. It subsequently reached the point with the

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rest of the suite upgrades that we could release one every year simply because of this cooperation and slick update process. We were soon outstripping everyone else in ACC when it came to weapon suite upgrades. The "Hog" became the most connected aircraft in the Combat Air Forces.

'The Maryland ANG [175th FW] was the first unit to get the C-model, along with Battle Creek [110th FW] of the Michigan ANG. The first jet was delivered in August 2006. One year later those two units were scheduled to deploy to Iraq, and yet there was still work to be done. We went to Lockheed Martin and told them we needed two things before we could deploy – a fully integrated data link, where the A-10s would be able to pass targeting information back and forth, and JDAM. The latter wasn't scheduled to be in the first C-model release, and they looked at us like we were insane. Fortunately, SADL worked perfectly when they delivered it to the 422nd TES in the spring of 2007. The first drop of a JDAM from an A-10C – I was lucky enough to be the first "Hog" pilot to expend the weapon – happened in June 2007, and the first combat drop from an A-10C took place in Iraq three months later.

'Developing the software to employ JDAM from the jet wasn't easy – in fact it was a real struggle – but as it was quickly becoming the weapon of choice in OIF [Operation *Iraqi Freedom*] and OEF, we had to make this happen before the first A-10Cs were deployed overseas. The first Maryland ANG jets were coming out of Hill AFB at the time, but there was no way they could be used operationally as the software installed just wasn't ready for that yet. The first Guard jets were coming off the modification lines straight after the operational test jets for us at Nellis and Eglin. We ended up with a situation where we had five Guard jets modified and just sitting there. What should we do with them? No kidding, Lt Col Kevin Campbell, who was the maintenance officer with the Maryland ANG, drew up a plan on a bar napkin to convince the air force to bring those five jets to Nellis, transfer them to the 422nd and put up a Guard detachment there to support our testing. We would get the Guard pilots checked out in testing and they would fly A-10C test sorties with us.'

Even with the ramp filled with A-10Cs, maintenance issues still had to be addressed as the active duty USAF had no interest in flying more sorties with these 'Hogs' without more maintainers. The solution was to bring in ANG expertise to run the programme, with CMSgt Terry Allen from the 175th FW duly taking over maintenance – without his expertise there would have been many more delays. Lt Col Campbell actually moved to Nellis for a year to keep the programme on course.

'Baltimore and Battle Creek were the two primary units involved in getting the A-10C ready for frontline service', Maj English recalled, 'but we were soon getting help from all over the place. All of a sudden we were turning more sorties than the weapons school. At one point during the C-model testing we had 13 jets available, and we turned "four-fours" [four flights of four aircraft a day] for about a year. I eventually joined the AFRes myself during the course of the programme, but I was still attached to the 422nd.

'On one occasion I remember heading out to the ramp for a test flight alongside Lt Col Campbell, who was of course a guardsman, a weapons school instructor pilot [IP] – we checked out the school's IPs as test guys

Armed with a Sniper Pod, A-10C 78-0704 taxies towards the runway at Nellis AFB on 18 October 2008 during *Red Flag 07-1*. Assigned to the Maryland ANG's 175th FW, which was one of the first two Guard units to receive the upgraded A-10, the jet was part of the fleet being used by the 422nd TES to get the C-model testing done as quickly as possible *(Gary Wetzel)*

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so that they could also fly our jets – and another Guard pilot. There wasn't a single active duty 422nd pilot in the flight. We had received our mission briefing from the CO of the 422nd, who was totally at ease with non-test pilots performing proving flights in the A-10C. It was an all-in project, and the 422nd's flexibility in accepting that notion easily accelerated the programme by 50 per cent.

'JDAM was, without a doubt, the biggest challenge for us, especially when it was brought forward on the capability schedule due to the urgent need for it in-theatre. There were two problems with JDAM. The first involved a red plastic ring that fits on a connector to secure the 1760 databus link to the bomb. We needed this red plastic ring in order to be able drop a JDAM from the A-10C. In the process of rushing the programme forward, Lockheed Martin had forgotten the red plastic rings – and this thing only costs a dollar to produce. With none available, we couldn't drop a single JDAM. With the whole programme on hold, the Guard connection came to the rescue yet again. Calls were quickly made to F-16 ANG units that had been using JDAM for a number of years, and within days we began receiving boxes of red plastic rings from all over the place. As stupid as the red plastic ring issue sounds now, it almost put a stop to the A-10C's test programme.

'Our second problem with JDAM was that either the bomb wasn't coming off the jet at all, or one in every four we released missed the target. We were dropping inert JDAM, as you can't really score live JDAM too well. And if an inert bomb missed the target by more than 200 metres, you would have no idea where it went, unless you got lucky and spotted a dust cloud rising from the range. We had analysts pouring over the information trying to figure out why the bombs would more than likely

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never leave the jet. There was probably a good three weeks of going back and forth with the engineers. It was about to shut us down, as after enough iterations we still couldn't find a single common denominator. Eventually, Boeing engineers talking to Lockheed Martin engineers discovered that the bomb was rounding high in its calculations to a different number of digits than those passed to it by the aircraft.

'The way JDAM worked was that you pushed the jet's pickle [bomb release] button and a set of GPS coordinates was sent to the bomb, which then sent the coordinates back to the jet to compare the numbers. If they didn't match up the JDAM wasn't coming off the A-10. The engineers fixed it and we soon got JDAM certified for use in combat.'

Years earlier, when 'Hog' pilots were first introduced to night vision goggles (NVGs), the lead element in developing tactics and procedures should have been the Nellis-based 66th Weapons Squadron (WPS) – the A-10 Weapons School – but it was not. This subsequently had an adverse effect on the nocturnal capabilities of frontline units. Keen to avoid such a failing with the introduction of the A-10C, ACC moved the 66th WPS to the front of the queue when it came to receiving examples of the updated 'Hog'. This allowed it to develop tactics to exploit the entire PE programme, which in turn meant that when new weapons officers graduated from the school they would do so as C-model experts. There were, of course, growing pains at first with the 'new' jet, but the end result would make the entire community stronger thanks to the PE upgrades improving the mission effectiveness of the A-10.

Nearly 20 years later, after skimming the forests of Germany looking for reference points to help him navigate to targets, Lt Col Marks would deploy to Afghanistan with the A-10A+ to support the Idaho ANG. 'In 2008 I never pulled a map out during my time there', he recalled. 'Not a single paper map, which was amazing after all my years as an A-10A pilot. The moving map was just money.' Technologically speaking, the A-10 had just been dragged into the 1990s.

A-10C 79-0640 of the Michigan ANG's 110th FW returns to Nellis AFB on 12 February 2007. Although serving with a unit that was part of the ANG during the certification of the PE upgrade, this aircraft was 'donated' to ACC's 422nd TES so that it could be gainfully employed clearing new equipment for frontline use rather than simply being another modified jet sitting idly on a ramp in Michigan with no potential for flight *(Gary Wetzel)*

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CHAPTER TWO

‘CHARLIE’ IN COMBAT

Members of the 172nd EFS pose for a photograph in front of A-10C 80-0255 at Bagram AB. The unit deployed with one member of the 104th FS, who remained with the group following the re-deployment from Al Asad, Iraq. A weapons officer and a pilot from the Nellis-based 422nd TES also served with the 172nd in Afghanistan, both aviators having previously been involved in the A-10C testing process *(Mike Lowe)*

When Lt Col Stephen Otto stepped off the transport aircraft at Al Asad air base, in Iraq, in late October 2007, it was as a member of the advance echelon (ADVON) team of the Michigan ANG’s 172nd FS/110th FW from Battle Creek ANG Base. The bulk of the 172nd’s pilots, maintainers and support personnel would arrive in the coming weeks to replace the 104th FS/175th FW of the Maryland ANG. The latter had deployed to Iraq in September, bringing with it a mix of jets from both units to form the 104th Expeditionary Fighter Squadron (EFS) – the first deployed combat squadron equipped with the A-10C. Otto was one of a handful of pilots and maintainers who would lay the foundations for a successful turnover of combat operations by the pilots from Battle Creek, who were splitting the four-month mission in Iraq with the Maryland ANG.

The 172nd FS had been the second squadron to receive the new A-10C, and its pilots’ conversion onto the upgraded aircraft had not followed the well-established procedures of training for a new jet type, as Otto observed;

‘It was not your stereotypical conversion, the way we ran it. This was primarily because of the unit’s level of experience at the time, as we were then a high-hour A-10 squadron. The first thing we did was get everybody up to speed on the new “switchology” of the A-10C’s cockpit. After they had all the required academics, they’d have one flight with a checked out IP. We had a “trust your folks” mentality, and once you were signed off by

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an IP you had your "learner's permit" and could begin the semi-canned sorties that introduced the in-flight lessons. Everybody had different things they needed to work on. Frequently, the guys would go out solo and run through some of the routine mission sequences we had developed for the "Hog" – locate a target, tag a target, set up a JDAM target and such. We kind of let the guys figure out for themselves what they needed to learn.'

CHANGE IN PLANS

On 2 November 2007 an F-15C Eagle flown by a pilot from the Missouri ANG's 131st FW literally broke in half during a training mission. Almost immediately, the USAF grounded its entire Eagle fleet, including the F-15E Strike Eagles flying combat missions in Afghanistan. The aircraft at Bagram air base, north of Kabul, were allowed to sit alert but could fly only in emergency situations to protect US and Coalition troops. A huge void had appeared in the protective close air support (CAS) umbrella that had been carefully put in place in-theatre. The last A-10s in Afghanistan had left Bagram just prior to the F-15 accident, and they had not been replaced. By the autumn of 2007 the US Department of Defense had decided that their presence was more urgently needed in Iraq, where the surge was in full swing. However, the severity of the structural problems afflicting the F-15 resulted in this decision being revoked and the ANG's A-10Cs transferring from Iraq to Afghanistan. Bagram was once again the home of the A-10 in OEF, as Lt Col Otto explained;

'I didn't find out about the move until 36 hours before we were changing theatres. It was one of those "We are doing what?" moments. We had to repack all of the stuff we'd just finished unpacking and start working on the problem. There really was no time to think about what we were going to do – we just kind of had to do it. The Baltimore guys really helped us out a lot. Indeed, they were the ones who actually flew the A-10s from Al Asad to Bagram so that we could get our pilots in crew rest and then fly them immediately on combat missions once we were in Afghanistan.'

Most of the remaining Michigan ANG personnel had by then arrived at Al Asad, where they expected to stay for the next two months. They

Two of the five jets provided by Maryland ANG to the 172nd EFS pull away from a tanker over northern Afghanistan. The beauty of the terrain during the Afghan winter can be seen below the aircraft. Usually, the intensity of the fight in-theatre diminishes during the winter months until conditions improve with the arrival of spring. However, in 2007-08 the 172nd EFS unexpectedly found itself performing a consistently high number of CAS missions throughout the winter *(Mike Lowe)*

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were politely told not to unpack. However, the last transport flight from Al Udied AB, in Qatar, to Iraq was delayed. In fact, it never departed, and some pilots and support personnel remained there for several days, before being flown directly to Afghanistan – they never got to see Al Asad. After months of preparation for the Iraq deployment, the sudden change did, as expected, present problems. Capt Eric White remembers;

'For one thing, all our winter weather gear was in Michigan. Mine was literally in a bag underneath my desk! Before we left Al Udied we tried to buy up all the winter gear we could, as we were going to need it.'

Landing at Bagram on 12 November 2007, the first elements of the 172nd EFS arrived late at night. They managed to get some sleep, and were greeted the next morning with the task of setting up their own operations. Their new 'home' was an empty shell of a building that had been sitting unused. Even though Bagram had accommodated USAF fighter jets since the A-10As of the 74th EFS landed there in March 2002, the cosmetic improvements made to the base in the nearly six years since did not leave much of an impression on White;

'Bagram was an old Soviet air base and it showed. I never thought I'd ever say "I wish I was in Iraq" until I got to Bagram. I really did wish I was in Iraq!'

When the 172nd FS deployed for OIF in 2003, the event had had an effect on the unit, especially when it came to self-sufficiency. 'Luckily, through previous experience', Lt Col Otto recalled, 'we had over-packed. We learned very quickly that it's good to be self-sufficient, having previously over-packed for OIF. Even though you get all the assurances from everyone that you'll have what you need when you get there, that's not always the situation. You politely tell them "no" and take all of the extra computers, radios and everything else, just in case. And at Bagram this policy paid immediate dividends when we realised what we had to work with. We were able to establish our stand-alone mission-planning cell, and we didn't have to wire any external elements into it as we used our own printers to produce our own products and we had our own AN/PRC-117 radios. The latter included the big antennas that were so critical to our early success, allowing us to start flying missions within 24 hours of the aeroplanes landing at Bagram.'

The construction of the operations building was the unit's main focus after the 'Hogs' were flying. Walls had to be erected, flooring laid and the mission from Iraq re-calibrated to Afghanistan. Maps of Afghanistan had to be obtained or printed, intelligence reports updated and the Special Instructions (SPINS) for OIF replaced with those applicable to OEF. Fortunately, as it was an ANG unit, most of the squadron's members had 'regular' day jobs. This meant there were carpenters and electricians able to quickly erect a solid facility. But nothing was easy. Bartering with other units at Bagram was common, and this involved the trading of vinyl flooring for internet connections. As with any bureaucracy, some elements are always more helpful than others, and Bagram was no different. Nevertheless, the 172nd EFS was set up and running much faster than had been expected by the Combined Air Operations Center (CAOC) – the nerve centre for aerial missions over Afghanistan.

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Most 172nd EFS personnel had not been to Bagram before, although one pilot, Maj Mike Lowe, had previously bombed the base from the cockpit of a US Marine Corps F/A-18C Hornet. Attached to VMFA-251 'Thunderbolts', which was in turn part of Carrier Air Wing 1, Lowe flew many missions in the early days of OEF from the deck of the aircraft carrier USS *Theodore Roosevelt* (CVN-71). He recalled;

Maj Mike Lowe of the 172nd EFS taxies out from the ramp at Bagram AB for a late afternoon sortie. A former US Marine Corps F/A-18 Hornet pilot, Lowe was making his first deployment to Bagram in 2007-08. As the A-10s replaced the grounded F-15Es, it was necessary for the JTACs to break their previous habit of calling on the Strike Eagles. Maj Lowe recalled, 'We were able to respond quicker than the F-15Es and the JTACs quickly came to see that. Soon they were requesting A-10s, but they had to circumvent the system a bit, especially with regard to the CAOC, which was parcelling out aircraft to respond to TICs. To make sure they got A-10s JTACs started asking for 30 mm cannon shells as the ordnance requested and, if they were SOF, they usually got it' *(Mike Lowe)*

'Our air wing got into OEF the week after it started in October 2001, and we took over for the next six months. It was amazing to watch on a daily basis as the Northern Alliance and SOF [special operations forces] teams swept south, calling us in to hit mortar sites or Taleban positions. Being on the ground at Bagram for the first time was pretty cool as I could look around and say I knew a pilot who dropped a bomb here and another guy who put one over there.'

Just over a week after arriving in-country, Lowe and his wingman, Capt Dan Drag, took off from Bagram on 25 November to provide convoy cover in Urozgan Province, in central Afghanistan – they would be replacing a pair of 'Hogs' that had been providing overwatch. The convoy was making its way back to a nearby forward operating base (FOB) and was approaching a bend in the road. Communication with personnel in the convoy indicated that they were concerned about being ambushed at this point. Lowe recalled;

'I was using the Litening pod to scan along the route, which had a small river on one side and a steep mountain on the other. As I was watching the vehicles pass through my field-of-view, the next thing I knew there were muzzle flashes from across the river as well as RPG trails. The JTAC [Joint Tactical Air Controller] came up immediately, screaming over the radio, "Under attack, under attack", adding that mortars were now being fired at them. He told me to stand by, as he'd built the 9-line [standard CAS briefing given by a JTAC to the pilot] for me, but I broke in and said I could be in on those guys south of the river with 30 mm within 30 seconds. He acknowledged and immediately cleared me "hot". I rolled in from the east. Capt Drag and I each made three strafing passes about 150 metres from the friendlies in order to get the Taleban to keep their heads down. When the ambush began we were only about ten minutes away from having to go and get gas. The attack could not have commenced at a worse time for us.

'The convoy soon became spread out following the ambush, with the vehicles scattered along the road. The friendlies were also trying to get their own mortars from the FOB to start firing on the Taleban. Despite being in an A-10C, I actually had to break out a map in order to get the grid lines to de-conflict with the mortar team. Sniper fire started coming down on the convoy from the mountain alongside the road. We were able to

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identify the location of the sniper, and once cleared to attack by the JTAC we made one pass each on that position, eliminating the threat.

'The JTAC was focused on removing the mortar threat from the equation, rounds coming in from a compound further along the river. You have to realise there are literally millions of little dirt compounds all over Afghanistan, and the JTAC was trying to talk us onto this one particular site housing the mortar. I was thinking, "Oh, my God, this is not going to work." In an effort to hurry things along, I focused on the compound I thought they were talking about and lined up to put down a WP [white phosphorous] rocket. The JTAC could then correct my aim point from there. These rockets are not terribly accurate – they're just bolted onto the wing, and not bore-sighted like the gun. They're not exactly precision weapons. Well, this one hit exactly where I was aiming, and where the JTAC was talking about. We strafed the compound and immediately things settled down.

'At this point we had to go to the tanker. Fortunately, my wingman had been working the tanker and had managed to get it to come off of its track and meet us overhead. As we got ready to move to the KC-135, the ambush lit off again. We had enough 30 mm rounds left for three passes, so I made the decision to make those runs. Now we were *in extremis* in respect to fuel, and all I can say is that Capt Drag was a smart kid and did the right thing bringing the tanker to us. We refuelled, the convoy had finally broken contact and we provided overwatch until they got safely back to the FOB.'

MAR KARDAD

On 7 December Operation *Mar Kardad* (Snakepit) was launched, and it subsequently became better known as the battle for Musa Qala. A town with a population of about 18,000, Musa Qala is situated in northern Helmand province. After the withdrawal of the International Security Assistance Force (ISAF) from the town in late 2006, the Taleban had taken control of Musa Qala. By December of the following year it was the largest urban area under Taleban control.

Capt Dan Drag and Maj Mike Lowe were photographed in front of A-10C 78-0705 on 25 November 2007 just after returning from a highly eventful mission over Urozgan Province in central Afghanistan. Both pilots are holding empty 30 mm shell cases just removed from the A-10. The aircraft's nose is covered in soot from the gun, Maj Lowe having fired nearly all of his 1150 rounds *(Mike Lowe)*

Mar Kardad was a British-led operation. The attack was, however, presented as the first battle in which Afghan National Army (ANA) units formed the main fighting force, as well as the lead element. However, the belief that *Mar Kardad* was actually led by the ANA was quickly dispelled, with ISAF troops in command of the operation. The liberating of Musa Qala was a small victory in what would be a larger battle for Helmand province – the primary

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focus point for ISAF operations over the next few years. As a result it became the centre of A-10 operations.

During the fight for Musa Qala, Capt Eric White undertook several sorties in support of ANA and ISAF forces;

'My first mission involved working with British troops who were taking steady fire from a position they couldn't identify. The soldiers were on one side of a wadi, trying to move along it, but they were pinned down. We came overhead and began looking with our Litening pods, trying to find the source of the incoming fire – we couldn't see anything. My wingman and I made the decision to drop down to get a better look. During that low pass we were able to see where the gunfire was coming from, as the Taleban were hiding in a trench. As we passed by I slewed my target designator [TD] in my HUD and marked it. With the C-model, the TD is space-stabilised, which meant that a GPS mark could be taken from it. With the target now designated, we climbed back up, positioned for a run in and strafed the enemy in that trench.

'Another memorable mission commenced in the late afternoon and stretched on into the evening, during which time we were able to support two different elements. The first was a unit of US Army engineers who, while trying to build a bridge, started taking fire from a small hut in the middle of a whole string of dirt dwellings. As it was going to be a hard target to identify correctly, we fired a couple of rockets and the JTAC confirmed that our aim was accurate. We lined up and came in low at 500 ft AGL [above ground level] for a low-angle strafe. We made two passes, shooting the gun from a range of between 4000 and 5000 ft. Minutes later, ground forces passed along some "intel" that indicated that the enemy inside the hut were still communicating with outside elements. We simply climbed up to 15,000 ft, put our flight in the right position and dropped a 500 lb GBU-38 JDAM on the hut to stop its occupants from communicating with fellow Taleban. And they did. We then dropped back down and performed a show-of-force flyby for those guys on the ground – it was more to get them rallied back up.

'Shortly thereafter we received new tasking that saw us head off to central Afghanistan. The sun had gone down by the time we checked in with the convoy that needed our protection. It consisted of two ANA vehicles up front, a few SOF vehicles in the middle and two more ANA vehicles trailing. As we were watching over them and scouting the road ahead, we found three vehicles on the same road about three to four miles away. There was only one road in the area, and they were sitting there on it. All of a sudden, two took off in different

With the arrival of the A-10C-equipped 172nd EFS in-theatre, for the first time in Afghanistan the 'Hog' was able to employ the GBU-38 500 lb JDAM – a weapon described by the unit's Lt Col Stephen Otto as 'amazingly precise. I was one of the old A-10 guys who wanted to guide my own bombs, but I quickly became a convert', he explained. 'On one particular mission we were able to spot an ambush being set up and we received clearance to drop a JDAM. Through our pods we watched as the Taleban machine guns opened up and the ambush went active. No kidding, two seconds later the JDAM that was already en route impacted their position. That ambush was no longer a problem' *(USAF)*

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Capt Eric White holds an American flag after a mission in early January 2008. The flying in Afghanistan could be challenging due to the terrain and weather, but for White there were other problems. He reported; 'Being there in winter, all the villages which were usually congregated in valleys, especially in the north, would start to light campfires each morning and it would produce a wispy smoke layer. We'd have to descend through it into mountainous terrain, primarily using our moving map. I had to do it a few times and it wasn't very much fun' *(Eric White)*

directions and the third sped off down the road towards the convoy. It got to within a mile of the convoy, stopped, turned around and then raced away in the direction it had come from.

'We could see that there was a guy in the back of the vehicle ahead of the convoy throwing out mines. Imagine a guy squatting in the back of a truck, throwing out tyres. It was the same motion, only he was throwing out mines. As we watched he threw out a third mine. We were relaying all this information to the ground commander. They pretty quickly confirmed the targets as hostile and cleared us to engage. We strafed the truck and it went flying off the road. Two guys got out and started running. We got one of them on our next pass but lost the other individual. We then hit the vehicle again with 30 mm rounds and went back and dropped a JDAM on one of the mines – we strafed another one. The ground forces engaged the closest mine with a Mk 19 grenade launcher and blew that up as well.

'With the mines dealt with, my wingman and I went to "yo-yo ops" – he went to the tanker while I stayed overhead, making sure nothing else came the convoy's way. While he was on the tanker and I was looking somewhere else, the mines and other explosives on the truck we had strafed cooked off. The explosion lit up the entire valley, allowing me to see a gigantic smoke ring rising from the wreckage of the truck. My first thought was that the convoy had been hit, but fortunately that wasn't the case. When the ground forces reached the area where the truck had exploded,

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the biggest piece they could find was an axle. The thing was obliterated, so who knows how much ordnance had been on it? The funny thing was that while my wingman was on the boom, all this happened at his "six o'clock", prompting the boom operator to ask him, "Holy cow, what was that?"'

TOO MANY IN THE STACK

As the American commitment to Afghanistan slowly began to expand in both size and scope, more and more aircraft started to operate within the country's airspace. An increasing number of these were unmanned aerial vehicles (UAVs) like the Predator and Reaper. Their operators' level of expertise was, however, always a matter of concern. And in 2008 UAV operations in OEF were still in their infancy on such a large scale, especially in respect to the drones' ability to remain in assigned altitude blocks. One A-10 pilot who almost collided with a UAV when it arrived in his airspace unannounced commented, 'This thing hits me and I have to eject over who knows where, while the Predator operator simply sets down his cup of coffee!' As the growing number of aircraft able to provide Intelligence, Surveillance and Reconnaissance (ISR) and non-traditional ISR (NTISR) took up their positions in and around Afghanistan, having too many assets in-theatre quickly became a problem, especially at night.

In mid-December Maj Lowe and Capt Drag launched on a night sortie as part of a larger operation that was to include multiple aircraft and helicopters operating in a valley under an overcast sky with a ceiling of 8000 ft AGL. Lowe commented;

'Everything started falling apart right away as one of the AC-130 gunships broke and never showed up. The weather was bad and we only had so much altitude to work with. Well, to start with we had four A-10s, one command and control aircraft, two UAVs and a single AC-130 gunship. So, with only the 8000 ft to work with, we started stacking everybody at 500 ft intervals. That was not a lot of room, especially in the conditions we had to work with, at night and on goggles.

'This was where the A-10C paid off in spades. Thank God we had SADL with the global SA, as all of our "Hogs" were tied into each other and we were able to de-conflict. You rarely stacked four "Hogs" over a target at night, on goggles, along with four or five other aircraft, in bad weather. You just didn't practice that very often. Working with the AC-130 "on the perch" that night was also different. Usually when employing that tactic [which saw the gunship bringing its impressive firepower to bear while circling over the target area] we would remain above them, but we simply didn't have the airspace to do that. We ended up flying outside their firing radius, while staying underneath them. This allowed the AC-130 crew to fire and not hit us thanks to our modest separation. You won't find that in any manuals.

'Since we were the quietest aeroplane out there, even more so than the helicopters, we were beneath everybody reconnoitring the area. We were ready to escort the helicopters, which were performing a troop infiltration mission. Right after we provided the escort, the "C & C" [command and control] aircraft found a group of guys waiting in what looked like an ambush position. Well, my targeting pod wasn't working that well, but the

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Pictured over Afghanistan two days after Christmas 2007, A-10C 78-0717 of the Maryland ANG, but assigned to the 172nd EFS, approaches a KC-135 tanker to refuel. Initially destined for Iraq, the Guardsmen of the Michigan ANG instead spent their deployment supporting OEF combat operations *(Mike Lowe)*

The view from the cockpit of an A-10C flying over the mountains of northern Afghanistan. The peaks of the Hindu Kush reach to over 24,000 ft and much of the north and eastern part of the nation is very mountainous *(Eric White)*

AC-130 put the burn down. Sure enough, you could see ten guys waiting to hit our troops moving through this town. Right away, the gunship was calling us in rather than engaging themselves. I was kind of surprised at this, as the AC-130 is deadly accurate, but we were more than happy to do it. Things then got busy very quickly. The other "Hogs" also began attack runs, and they ended up pulling back the friendly forces. The intention was to level the area, as the whole thing had gotten too hairy. As all of the targets were being marked with all of these DMPIs [desired mean point of impact], it was a little confused.

'The hardest part of working with all of this was the number of IR [infrared] markers being used. The different UAVs and the other platforms were all pointing out DMPIs they wanted hit. Everyone started putting these things down, marking targets for us to strafe. To make matters worse, all the friendlies on the ground were wearing "fireflies" [IR sparklers] to help our SA on their location, so the whole thing was lit up like a Christmas tree, making it really hard to pick out the targets. We eventually had to start telling people to strangle their IR markers and dedicate one person to designate the target. This was stuff we were making up on the fly, because at this point I don't think such a mission had ever been practiced before. It was a mishap waiting to happen, so we had to be very methodical before committing to a strafing pass.

'We spent about 90 minutes down at 300 ft in this valley. You

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had to hold on to your altitude and know where your wingman was because you didn't have enough separation to play fast and loose – especially with other aircraft shooting. There were plenty of weapons going through the sky. It was the middle of winter, yet I was sweating my ass off! It was the hardest mission I ever flew.'

DEFENCE OF FRIENDLY FORCES

The A-10s from Battle Creek would be replaced by the 81st EFS from Spangdahlem AB, Germany, during January 2008, the unit's ADVON team arriving ahead of the squadron so as to ensure that a smooth transition took place. Nevertheless, despite the impending arrival of a new unit in-theatre and the usual winter slowdown in combat operations, 172nd EFS pilots still had some fighting to do. Just days away from being fully relieved, two Battle Creek pilots found themselves making the right decision to protect American forces, yet in doing so they put themselves at the risk of punishment for operating on the fringes of the OEF rules of engagement (ROE).

During the early afternoon of 4 January Otto and his wingman departed Bagram on a planned mission to provide overwatch and ISR support for a nine-vehicle convoy of US Army SOF personnel heading through the Tagab District on their return journey to FOB Pathfinder. Once airborne, the pilots checked in with the Air Support Operations Centre (ASOC) to make sure they were still tasked with the original mission. Once this was confirmed they proceeded west from Bagram and eventually entered a north-south valley in the target area, sliding under a layer of clouds that blanketed the terrain at 6000 ft. Lt Col Otto recalled;

'Once we got overhead we ended up relieving a B-1 that was on station, its crew having become fixated on a single vehicle pretty far away from the convoy. Before they left they tried to hand their target over to us, but we explained that we were there to work exclusively with the convoy.

'We started talking to the JTAC, and he indicated that they expected to be ambushed on the way back to their FOB, which was then about five "klicks" (five kilometres) north. They tasked us to take a look at a village they were approaching, so we steered our targeting pods and began to do just that. We were able to see some activity on the roofs, which didn't make sense, and we informed the JTAC of this. He requested a show of force, so we rolled down low and flew right over the small village. During the flypast we noticed a large number of women and children crossing the road, moving east to west. I relayed this to the JTAC, but at the time neither of us put two and two together. In retrospect, this was a bigger indicator of the ambush that was about to happen.

'We went back up to our orbit and, just as the Humvees were passing through the field-of-view [FOV] of my targeting pod, the guys on the roofs opened up with RPG and machine gun fire. Looking out of our canopies, we could clearly see the tracks of all the small arms fire from the muzzle flashes, and the position of the SOF convoy.'

The Taleban force was positioned between 50 metres and 200 metres along the eastern side of the convoy route, the SOF vehicles having entered a kill zone that stretched for nearly four kilometres. The enemy fire was

An A-10C of the 172nd EFS shares a rain-soaked Bagram ramp with an A-model jet from the 81st EFS on 8 January 2008. The latter unit had just arrived in-theatre to replace the 172nd, which would return home to Michigan and subsequently fall victim to BRAC. The 81st EFS was making the last A-10A deployment to Bagram AB, as PE-upgraded jets had not yet reached USAFE *(Mark Gilchrest)*

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coming from rooftops, open fields and a wadi parallel to the direction of travel. An immediate request was made for fire from the A-10s, and the two 'Hog' pilots were cleared hot within 30 seconds of the call for support having been made. Otto made his first pass, subsequently reporting;

'I was on the opposite side of my circular orbit from the action when the firing started, and it took me several minutes to get into position to make a good strafing run. I saw the muzzle flashes and was in the process of firing my first burst when the JTAC called out a guy on one of the roofs. I had enough time left to get in a second burst at him. Later feedback from the convoy indicated there had indeed been a Taleban fighter up on that roof. He was in the process of loading an RPG when he more or less took a direct hit from a 30 mm HEI [high explosive incendiary] round.'

Over the next two-and-a-half minutes the two A-10s made four strafing passes, the pilots firing their GAU-8 30 mm Gatling guns at targets just 50 metres from friendly forces. Several minutes into the ambush, the A-10s lost radio contact with the JTAC who had been manning a 0.50-cal machine gun atop one of the Humvees in the convoy. It was assumed that he had either been killed or incapacitated during the firefight. Muzzle flashes and explosions from RPGs still followed the speeding vehicles as they tried to pass through this semi-urban setting. With the JTAC off the air and the observers in the FOB unable to see the entire ambush, authority to clear the 'Hogs' to attack could not be given from the ground. The A-10 pilots had to make a choice.

US Marine Corps squadrons have a policy of 'reasonable assurance' that enables aircraft providing CAS to continue attacking enemy forces once the initial targeting information has been provided, regardless of whether there is a loss of communication with the controlling element. Although the USAF does not have such a flexible policy, it permits the defence of friendly forces within the ROE if positive identification of both friendly and enemy positions can be established and maintained. That guideline was rarely used, however, even in early 2008 when the ROE was less restrictive than in 2014.

Given the situation on the ground witnessed by the A-10 pilots on 4 January, Otto and his wingman decided to maintain the pressure on the

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enemy with continual strafing passes. Indeed, five more gun runs were made during the break in communications. The 'Hog' pilots again fired at enemy positions within 50 metres of friendly forces on several of these strafing runs, which in turn attracted ground fire due to the low altitude at which the A-10s were flying. In the midst of these gunnery passes, a large number of enemy fighters attempted to cross the nearby wadi from east to west so as to get into an additional ambush position. This potential threat was quickly neutralised by accurate fire from the two A-10s.

Communications with the JTAC eventually resumed, although the thundering noise of the 0.50-cal machine gun that he was manning all but drowned him out. Resolving any ambiguity over his condition, he cleared the pilots to make two more passes just as the convoy broke free of the village. During their remaining time on station, Otto and his wingman provided ISR coverage for the final leg of the convoy's journey back to FOB Pathfinder. Despite the hail of enemy fire that had 'greeted' the vehicles as they entered the village, there had been no friendlies wounded or killed. The ground commander attributed the lack of casualties to the A-10s, which he stated had provided timely, accurate and deadly CAS even *after* communications were lost with the JTAC. Otto recalled;

'When we landed it crossed our minds that we could be in trouble. Fortunately, there was no fratricide, no civilian casualties and all our guys made it back, so we did the right thing. But knowing the legal issues of the ROE structure and the mission sensitivity at the time, we received kudos for our performance. Thankfully, we didn't screw anything up, for it would have been our arses on the line if we had. Defence of friendly forces is still an option open to us should we lose contact with the JTAC, and I'd venture to say that it's something all pilots are aware of. However, most people wouldn't have used it as liberally as we did that day.

'I have to give the Taleban credit on this occasion, for they actually took civilian casualties into account as they set up their ambush, ushering the women and children away from the village. And there were no reports of any civilian casualties or wounded persons brought to the FOB for medical care after the engagement. There was some respect for the Taleban as fighters following this clash too, for although they got their arses handed to them, they had the balls to keep going into a fight where they were outmatched and suffered continual casualties. The ambush lasted for at least 90 minutes, and in that time I nearly emptied my gun of its 1174 rounds – my partner fired 75 per cent of his rounds.'

The initial A-10C deployment ended with the 172nd EFS returning to Michigan on 15 January 2008. One year later, on 19 February 2009, the last A-10C departed the 172nd's Battle Creek base as the unit was affected by the 2005 BRAC

81st EFS pilot Capt Mark Gilchrest plugs into the refuelling boom of a KC-10 over Afghanistan on 19 January 2008. A-10A 81-0952 is carrying a pair of GBU-12 500 lb LGBs, two LAU-131 rocket launchers, a Litening pod and an SUU-25 flare dispenser. The A-model jets lacked the upgrades installed in the A-10C that allowed the latter to carry JDAM. Therefore, two Mk 82 500 lb airburst bombs were uploaded onto weapons stations 5 and 7, hidden from view under the fuselage of the jet in this photograph *(Mark Gilchrest)*

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Posing on and in front of 81-0966, pilots and maintainers from the 81st EFS take a few moments to document the last A-10A deployment to OEF. Flying from Bagram during the traditionally slower winter months, the squadron fired half as many 30 mm rounds as it had during its last OEF deployment in the summer of 2006 *(USAF)*

decision. Taking their place at Bagram was the last A-10A squadron to deploy to OEF, the 81st EFS, which spent nearly four months flying combat missions in-theatre. The difference between the A- and C-model 'Hog' was instantly apparent, as Otto recalled;

'During our handover we flew LAO [local area orientation] flights with the "Spang" guys. Following one of those flights the "Spang" weapons officer told me that he couldn't believe how much faster a pilot in the C-model could get target SA, with a full plot, than a pilot still flying an A-10A. And it wasn't a pilot experience thing either. Our ability to quickly build SA was down to the C-model's vastly superior pilot–technology interface.'

A-10A+ OEF DEBUT

The 81st EFS returned to Germany in late May 2008, its place at Bagram being taken by a 'Rainbow' squadron of 12 jets from two ANG units and one AFRes squadron – each unit contributed four jets to the deployment. These aircraft were the first A-10A+ airframes to be sent to Afghanistan, although the upgraded jets had previously seen combat in Iraq in the summer of 2007. The two ANG units were the 103rd FS/111th FW of the Pennsylvania ANG and the 190th FS/124th Wing of the Idaho ANG. Four A-10A+ jets from the 303rd FS/442nd FW at Whiteman AFB completed the force structure. This deployment would also be the last for the Pennsylvania ANG, as it too fell victim to BRAC after completing OEF. The 103rd would lose all of its jets in mid-2010 and be inactivated on 31 March 2011.

On 5 June 2008 Maj Anthony Roe and Col James Mackey left Bagram as 'Hawg 51' and 'Hawg 52'. Initially, the pair was to support a convoy

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departing a FOB near Gardez, the capital of Paktia Province in eastern Afghanistan. However, almost as soon as the A-10s were lined up on the runway and had released their brakes their mission had changed. They were re-rolled to support troops in contact (TIC) about 20 miles south of Bagram. When they arrived, a flight of Strike Eagles was orbiting over the area of operations (AO) and a few Apaches were working down low. Roe subsequently recalled;

'We got on the radio to the ASOC and informed them that this TIC was under control. Having requested to go back to our original tasking, we were instead told to check out possible IED [improvised explosive device] emplacement directly east towards Gardez. Apparently, there were some guys on a motorcycle planting IEDs, and when we arrived overhead we tracked them for a while, cross-cuing our pods to make sure we were looking at the right individuals. Once had the target confirmed, we ended up strafing them off the motorcycle – it blew up and they crawled into a field. Col Mackey designated the target for me, because once those two guys stopped crawling they almost blended in with the background. We ended up finishing them off with another strafing pass.

'At this point we then headed to the tanker. After refuelling, and two hours into our flight, we finally headed off to perform our original mission tasking – the convoy escort near Gardez.

'We tried several times to contact the convoy, and 20 minutes later a JTAC from the FOB finally told us that the vehicles had never even left the base due to maintenance problems. He asked if we could do a show of force down their route, nevertheless. We did that, and let the JTAC know it had been done. He then told us that whilst monitoring a second radio frequency he had heard another American convoy request aerial assistance after coming under attack. The JTAC gave us the coordinates and it turned out it was only about 7.5 miles away from where we were, over a big ridgeline from the FOB. That particular ridgeline, and others of a similar size, had always been a bit of a challenge because radios, unless they're SATCOM [satellite communication], work line-of-sight [LOS]. Well, you

A-10A+ 82-0659 of the 103rd EFS pulls sharply away from a KC-135 after receiving enough fuel to allow it to continue its mission. The 'false canopy' and the entire load-out is on display, the latter consisting of two LAU-131 rocket launchers, two GBU-12 500 lb LGBs, one Mk 82 airburst 500 lb bomb, a Litening targeting pod and an SUU-25 flare launcher *(USAF)*

Two A-10A+s taxi toward the flightline at Bagram AB on 26 July 2008. Both jets were assigned to the 303rd EFS, but only the rear aircraft (A-10A+ 78-0655) belonged to the AFRes unit based at Whiteman AFB. The lead aeroplane (82-0659) was one of four supplied by the Pennsylvania ANG's 103rd FS. Four more came from the 190th FS/124th Wing of the Idaho ANG *(USAF)*

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Col James Mackey (left) and Maj Anthony Roe stand in front of A-10A+ 79-0123 of the 303rd EFS on the morning of 5 June 2008 prior to flying a mission during which they saved the lives of a trapped convoy of Kentucky National Guardsman. Both 'Hog' pilots, who are graduates of the USAF Academy and still active ice hockey players, made the most of a rare opportunity to fly together. 'Col Mackey is a highly experienced pilot who flew in Operation *Desert Storm*', Roe explained. 'So to have such a veteran aviator flying as your wingman is kind of unheard of, especially one who is a 4000-hour "Hog" pilot. On that mission we didn't require any technology. All I needed was a great wingman and an awesome jet. I looked outside and used the gun' *(Anthony Roe)*

can't have LOS from radio to radio if you're trying to look through a mountain.

'We put our targeting pods right on the coordinates given to us by the JTAC and we saw three MRAP [Mine-Resistant Ambush Protected] vehicles stuck on a 90-degree bend in the road. There was very high terrain off to the left side of the vehicles and a little bit of rising terrain off to the right. The 90-degree bend was followed by another one, after which the road started heading out of the little valley in which they were stuck. The MRAPs were in a big kill zone, and the enemy was clearly trying to take out the convoy. A lot of this I learned after the fact. At the time I was trying to get in touch with the convoy but couldn't until I finally got onto an FM frequency. That's not our preferred strike frequency, but of the three radios in my cockpit it was the only one I could raise them on.

'With the targeting pod we could see what looked like black or dark spots near the centre of the three vehicles. It turned out to be hydraulic fluid from the middle vehicle, which was disabled. The enemy was shooting at them from the high ground on the left, and also taking pot shots at the MRAPs from the right.

'I assumed the guy I was talking to over the radio was in one of the three vehicles, but he wasn't – that was why his voice was so calm. He was actually in the lead vehicle of the convoy, and when the ambush started the front part of the convoy took off! The 16 trapped soldiers in the remaining three MRAPs were from the Kentucky National Guard, and this ambush had occurred in the fourth of what turned out to be a 16-month deployment for the unit. My radio contact's call sign was "Fedex 06", and he was able to talk to the ambushed MRAPs. I couldn't, however, as every other convoy in Afghanistan was on this common frequency. From his position in the valley "Fedex 06" could only hear our conversation, although I could hear every conversation from every convoy within a radius of 20 miles. It was creating confusion to say the least. I ended up having to say, "This is an emergency close air support situation. If you're not "Fedex 06" stay off the frequency." We called this common frequency "Trucker Comms".

'I needed to make sure that there were no friendlies outside the three ambushed MRAPs. We never saw the enemy during this action simply because, even in an A-10, I was going fast, comparatively speaking. One soldier was outside the broken MRAP returning fire, whilst trying to fix the disabled vehicle, as there was no way all 16 soldiers were going to fit inside a single MRAP. Although they were running out of ammunition,

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they had no option but to stay and fight. They finally tried to indicate to us where the most effective fire was coming from via a yellow smoke grenade, but it rolled right back down the hill and landed ten feet from their vehicles.

'Col Mackey was still circling above me at about 20,000 ft, as we were trying to keep the JTAC at the FOB in the loop. We ended up declaring an emergency CAS situation, as there were no other options at this point. This meant that CAS could be conducted, but there was no qualified JTAC controlling us from the ground. Fortunately, both Col Mackey and I are qualified FAC(A)s, and we were going to find out exactly where the friendlies were in respect to the enemy's location before we employed our ordnance. Ultimately, we were going to have to clear ourselves to roll in and shoot, rather than relying on the JTAC to clear us "hot". Col Mackey actually had to tell the JTAC to be quiet on the radio, as he was trying to do his job but he was only hearing one side of the conversation.

'The ambushed American soldiers fired another smoke grenade, this time red, and it stayed on the hill marking the target. I asked "Fedex 06", "Do you need me to shoot where the red smoke is?" I had to ask about five times. Finally, someone who was in the lead vehicle, which had sped off to safety but was following the conversations between the ambushed element "Fedex 06" and us, screamed "Say yes, goddamn it, say yes!" At the time I thought I was hearing someone in the three ambushed MRAPs. I immediately called to Col Mackay and said, "Its wedge-shooters guns. I need you down here now!"

'I told everyone in the ambushed vehicles to stay put. I got a positive response from the three MRAPs through "Fedex 06", after which I told them it's going to get loud. I was also told that all the troops were now back in their vehicles. This was important, as now I knew that anybody I saw outside of those MRAPs was a bad guy. I rolled in and fired off a burst from the gun, as well as a whole pod of seven rockets. The problem was that we were now within the weapons' minimum risk distance, having had

On 17 November 2012 four members of the Kentucky National Guard visited the 303rd FS at Whiteman AFB to present Col Mackey and Lt Col Roe with a flag to be flown by the unit in Afghanistan. In addition, each man received a plaque thanking them for their efforts to save the guardsmen's lives on 5 June 2008. The visit allowed the soldiers an opportunity to see an A-10 up close and to meet the pilots who had saved their lives. The men are standing in front of 79-0123, which was one of the two A-10A+s flown by Mackey and Roe that day *(442nd FW)*

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Two A-10s slide behind a tanker to prepare for aerial refuelling. Although both jets display markings associated with the 74th FS from Moody AFB, they were actually deployed with the 75th EFS. The aircraft nearest to the camera is 79-0135, which joined the deployment as a replacement after the USAF grounded some A-10s following the discovery of wing cracks *(USAF)*

to aim close to the vehicles in order to neutralise the threat posed by the enemy. On our first pass we fired just 60 metres off the front left bumper of the lead MRAP. We did two more attack runs each and then the incoming fire stopped. We then provided overwatch until the guardsmen were able to get the vehicles out of there.

'The soldiers in the MRAPs had reached the point where the ammo was dwindling rapidly, and the decision had been made to fix bayonets and charge the hill. They weren't going to die just sitting in those vehicles. They were three to five minutes away from having no more bullets and no more grenades – nothing. They'd have been out of options, but fortunately we got the call to help out.'

The 'Rainbow' squadron rotated home in late September 2008. It was replaced by the 'Tiger Sharks' of the 75th EFS, the unit's arrival marking the first deployment of a 'Hog' squadron from Moody AFB, Georgia, after the 23rd FG had moved from Pope AFB in late 2007. Shortly after arriving at Moody, the group's 74th and 75th FSs had started sending their A-10As to Hill AFB, where they received the PE package. Upgrade training for pilots was conducted at Davis-Monthan AFB in Tucson, Arizona.

In the first week of October 2008, shortly after the 75th EFS arrived at Bagram, the USAF announced a partial grounding of the A-10 fleet. During routine inspections at the Ogden Air Logistics Center at Hill AFB, cracks had been found near the centre panels of the landing gear trunnions in some A-10s arriving for depot-level repair. The grounding involved 'Hogs' that were among the first 250 A-10s to be delivered to the USAF, as they had been built with thinner wings than later airframes. The cracks meant that, initially, 129 jets had to be grounded, but this number grew to 191 after further inspections had been carried out. Fortunately, the USAF had signed a $1 billion wing-replacement contract with Boeing in 2007, although the first re-winged A-10 would not be rolled out until 15 February 2012.

The 75th EFS deployed with 12 A-10Cs, but these aircraft were not immune from the wing crack issue. Four replacement airframes were delivered to Bagram to allow the suspect jets to be flown to Spangdahlem for inspection. A further eight 'Hogs' were transferred to Bagram from Moody following the groundings so as to ensure that CAS coverage was not adversely affected.

Despite the wing crack problems, the 75th EFS continued to provide the necessary CAS support in-theatre. This included one mission on 28 October when two A-10s – 'Hawg 55' and 'Hawg 56' – were able to overcome weather and a determined enemy to save the lives of a six-man

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US Marine Corps SOF team. Capt Jeremiah Parvin and 1Lt Aaron Cavazos were returning to Bagram at the end of a three-hour mission when they were diverted to TIC 'India Golf' south of the Bala Murghab District in Badghis Province, 325 miles from their current position on the Afghan–Turkmenistan border. A dedicated tanker was provided to support the flight and the A-10s refuelled en route to the area.

Two flights of F/A-18 Hornets were already on station, attempting to support the ground forces. As the A-10s moved to within 50 miles of the AO, their pilots could hear one-way communications between the Hornets and the SOF team. It was clear that the Hornets were unable to penetrate the weather ceiling covering the valley and mountains around the AO. The F/A-18 pilots provided a status update, checked off station and headed back to their carrier in the northern Arabian Sea. 1Lt Cavazos recalled what happened next;

'As we got closer we began to talk to the JTAC on the ground – "Halo 11" – who was with Marine Special Operations Team [MSOT] 5. They were located in the middle of the valley below us. We couldn't see them. They were pinned down inside a building within a village compound. They were in hand-to-hand combat with the Taleban and had been coming under intense fire from multiple PKM [7.62 mm] and DShK [12.7 mm] heavy machine guns and RPGs for nearly two hours.

'We later learned that MSOT-5 had been forced back into a single building and was in muzzle-to-muzzle combat with 12-15 Taleban. The Taleban were poking AK-47s through windows, holding them above their heads and spraying rounds inside. The Marines were throwing grenades out of the windows to keep the Taleban from shooting through them. The building had been hit by more than 20 RPGs so the structure was starting to degrade to the point where it wasn't safe. How these guys survived I have no idea. We were told by the JTAC that if they didn't get immediate help they were going to die.

'Well, Capt Parvin and I decided we weren't going to orbit overhead and listen to them die. He came up with a plan to penetrate the clouds and enter the valley. There were multiple cloud layers, most of which dropped to 3000 ft AGL. As we had no local maps and the "Hog" had no radar, there was no real way of safely penetrating the weather and avoiding the mountains surrounding the valley. "Halo 11" had reported the valley as running north to south, and they were in the middle of it. The plan developed by Capt Parvin had the flight penetrate the clouds on a northerly heading using the coordinates of the trapped Marines. This provided a reasonable expectation that the mountains would be avoided.

Capt Thomas Harney prepares to receive fuel mid-mission on 7 October 2008. Three GBU-38 500 lb JDAMs can be seen hanging from the aircraft, the popularity of the weapon being undeniable following the arrival of PE upgrade A-10s in Afghanistan *(USAF)*

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Another of the replacement aircraft to augment the 75th EFS, 80-0144, taxies towards the Bagram AB runway for a late afternoon mission. Behind the 'Hog' is fellow replacement A-10C 80-0272 which, in turn, is taxiing past F-15E Strike Eagles from the 391st EFS – they were also flying CAS missions from the base at that time *(USAF)*

'Of course, the engagement took place at twilight, making things even more difficult for us. Capt Parvin went first, with me in trail. He said, "I'm under the weather and there's a firefight and I can see everything." The sun was just touching the horizon as I dropped into the clouds. As I passed through there was a lot of false shadowing, and all the dust and water vapour just accentuated the shadowing. The problem was that once you got under the weather it would be very easy to be misled by false horizons or false peaks. Once under the clouds and in the valley it was easy to see the Taleban fighting positions, and where their fire was being directed. Four large points, representing the heavy machine guns, were hammering "Halo 11". It was just bright enough to see outside, but not dark enough for me to use to my NVGs and still de-conflict from my flight lead. The smoke and haze from the firefight didn't help either. We couldn't do our normal procedural de-confliction, so I made the call, "'Hawg' flight, go Christmas tree!" He did that immediately.

'We got two effects from that. I could now see him and de-conflict from him in that valley. And the Taleban knew exactly where we were, as we'd turned on every lighting source we had. We instantly started receiving surface fire, which is what we wanted. We wanted them to start shooting at us, and not the Marines. We were happy to have them shoot at us.'

Seeing the enemy positions, 'Hawg' flight began to nominate targets. Using coordination provided by a second JTAC assigned to an MSOT team further to the north, Parvin and Cavazos were able to build the 9-lines necessary in order to clear the A-10s in 'hot'. Parvin made the first strafing run, followed by Cavazos. During the next 25 minutes each pilot made seven more gun runs, firing 30 mm rounds within 50 metres of the MSOT positions. Unable to execute the preferred night strafing manoeuvres because of the weather, the pair opted for the lower angle attacks normally reserved for daytime operations.

Their passes put the A-10s well within range of the enemy machine guns. In fact, they passed within 500 ft of the DShKs, which was well inside the weapon's 8200 ft effective tactical range. Cavazos destroyed three of the four DShK positions and Parvin got the other one. This allowed 'Halo 11' to fight off the surviving Taleban directly outside the building. As the fire decreased, the flight of A-10s made show-of-force passes to draw enemy fire (*text continues on page 42*).

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COLOUR PLATES

1
A-10C 80-0255 of the 172nd EFS/455th AEW, Bagram AB, Afghanistan, January 2008

2
A-10C 81-0975 of the 172nd EFS/455th AEW, Bagram AB, Afghanistan, January 2008

3
A-10C 78-0705 of the 172nd EFS/455th AEW, Bagram AB, Afghanistan, January 2008

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4

A-10A 81-0952 of the 81st EFS/455th AEW, Bagram AB, Afghanistan, March 2008

5

A-10A+ 78-0655 of the 303rd EFS/455th AEW, Bagram AB, Afghanistan, June 2008

6

A-10A+ 82-0659 of the 103rd EFS/455th AEW, Bagram AB, Afghanistan, July 2008

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7
A-10A+ 80-0250 of the 190th EFS/455th AEW, Bagram AB, Afghanistan, August 2008

8
A-10C 79-0186 of the 75th EFS/455th AEW, Bagram AB, Afghanistan, December 2008

9
A-10C 78-0684 of the 354th EFS/451st AEW, Kandahar Airfield, Afghanistan, October 2009

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10

A-10C 79-0202 of the 354th EFS/451st AEW, Kandahar Airfield, Afghanistan, October 2009

11

A-10C 78-0719 of the 104th EFS/451st AEW, Kandahar Airfield, Afghanistan, February 2010

12

A-10C 79-0129 of the 184th EFS/451st AEW, Kandahar Airfield, Afghanistan, May 2010

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13
A-10C 79-0194 of the 81st EFS/451st AEW, Kandahar Airfield, Afghanistan, August 2010

14
A-10C 80-0223 of the 74th EFS/451st AEW, Kandahar Airfield, Afghanistan, April 2011

15
A-10C 80-0258 of the 107th EFS/451st AEW, Kandahar Airfield, Afghanistan, October 2011

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16

A-10C 79-0145 of the 107th EFS/451st AEW, Kandahar Airfield, Afghanistan, November 2011

17

A-10C 80-0265 of the 303rd EFS/455th AEW, Bagram AB, Afghanistan, January 2012

18

A-10C 79-0154 of the 47th EFS/455th AEW, Bagram AB, Afghanistan, February 2012

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19
A-10C 80-0188 of the 184th EFS/455th AEW, Bagram AB, Afghanistan, November 2012

20
A-10C 82-0662 of the 354th EFS/455th AEW, Bagram AB, Afghanistan, January 2013

21
A-10C 82-0660 of the 74th EFS/455th AEW, Bagram AB, Afghanistan, July 2013

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22
A-10C 81-0981 of the 74th EFS/455th AEW, Bagram AB, Afghanistan, September 2013

23
A-10C 78-0697 of the 75th EFS/455th AEW, Bagram AB, Afghanistan, February 2014

24
A-10C 79-0122 of the 303rd EFS/455th AEW, Bagram AB, Afghanistan, April 2014

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Once they had achieved this they used the firing points as further targets for their 30 mm guns, as Parvin explained;

'As we were making our gun runs the Marines were preparing to go, but they had two wounded to deal with. One was the team medic, who had been wounded when a round ricocheted off his rifle and splintered metal into his legs and abdomen. The team leader had also been shot twice in the arm. The time to go was now. They performed a retrograde operation [an organised movement to the rear away from the enemy] up to a wall to the north of their compound, and once they broke out of there MSOT-5 started receiving more fire.

The business end of the A-10C – the GAU-8/A Avenger 30 mm seven-barrel Gatling gun. The weapon's 10,000 lb recoil force is greater than the output of one of the A-10's two TF34 engines. Despite this force, firing the gun does not slow the aircraft down by more than a few miles per hour *(USAF)*

'It was at this point that we recommenced our danger-close runs. We were shooting over their shoulders at night as they moved. While they were in the building it was easier to shoot that close to them – 40-50 metres – but once they were on foot it was a little more hairy. The enemy was chasing them and firing at them. The Marines actually had an Afghan interpreter with them, and he could hear the Taleban leader telling his forces, "You have to go in there and get them. We will all die today trying to kill these men." It was a very determined enemy who was trying to make sure that these Marines died.

'Once on the move the Marines turned on their strobe lights to mark their position. This allowed us to shoot closer to them. We got inside 25 metres on numerous occasions as they were dismounted, running and carrying their wounded. Every time they moved you could see surface fire coming back at them, which to us was a self-nominating target. Most of the time we were shooting over the Marines' heads as we flew directly at them. They could see us because our lights were on and they could see the surface fire coming up at us. From their vantage point you would have seen an A-10 with a strobe light on and tracer fire going up at it, followed by 30 mm rounds coming back down. A split-second later there would be the sound and force of 60 hand grenades [30 mm rounds detonating have been

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Brig Gen Scott Pleus, 56th FW commander, pins the Air Force Combat Action Medal onto Capt Aaron Cavazos' flightsuit on 16 January 2015 at Luke AFB. Cavazos received the award, along with the Distinguished Flying Cross with Valor (in a ceremony held at Davis-Monthan AFB on 14 March 2014), for his heroism while serving in OEF on 28 October 2008. His efforts that day, along with those of squadronmate Capt Jeremiah Parvin, saved the lives of six Marines from MSOT-5 *(USAF)*

compared to grenades going off] a second exploding behind you, followed by the sound of the gun. Every time we shot that close they told us it felt more and more like they were going to live.

'Eventually, the Marines got far enough away that the Taleban had had enough of chasing them, especially with us shooting at them. After an 800-metre retrograde operation that saw MSOT-5 meet up with the other nearby team, we stayed to provide armed overwatch until everyone was back at FOB Todd.

'Looking back, I was more concerned with flying into the rocks than being hit by AAA. That was the one mission where I thought we were going to lose – either the team was going to die or we were going to die, or both. Fortunately, neither of those things happened.'

In an attempt to strengthen the case for medals to be awarded to Capt Parvin and 1Lt Cavazos (who both subsequently received the Distinguished Flying Cross (DFC) with Valor), both the assistant team leader and team chief of MSOT-5 wrote letters urging the award of decorations to the two pilots. With names redacted for security, the assistant team leader wrote the following;

'Our situation became dire when I was shot twice in the arm and lost a significant amount of blood, even though a tourniquet was applied. Our corpsman was hit on the helmet and three of our weapons were damaged by enemy fire. At times we were firing at insurgents muzzle-to-muzzle. As I exited one room and entered the hallway I literally came within six feet of an insurgent with an AK-47 and an RPG launcher.

'As we pushed north from the wall under heavy enemy fire, I distinctly remember the sound of the 30 mm rounds as the first A-10 made a gun run in support of our movement. As I looked up, I felt like I could reach up and touch the A-10s as they came screaming directly overhead. As I made it to the next ditch in the field, I took a head count to make sure that I had all of my team within sight. It was at that moment that I realised the heavy volume of insurgent fire was no longer cracking directly overhead – it was now being directed at the section of A-10s.

Pulling away hard from a KC-135 tanker, A-10C 79-0179 of the 75th EFS dispenses flares for a USAF 'combat cameraman' on 12 November 2008. Designed to decoy infrared missiles, the flares have been widely used in OEF to provide 'show of force' demonstrations to discourage enemy activity and give reassurance to ISAF troops *(USAF)*

'It is hard to describe what it's like to see and hear 30 mm rounds from an A-10 impact less than 50 metres from you. I can say with the utmost certainty that if it was not for the pilots' actions that day, I would not be alive to write this statement. I would have been killed by enemy fire or bled out due to the gunshot wounds I had received.'

Echoing the assistant team leader's comments, MSOT-5's team chief reported;

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'We were completely cut-off from other elements and found ourselves gravely outnumbered as insurgents successfully breached the compound we were in. The insurgent fighters made no less than three attempts to breach the building that we were in. We repelled each attempt, and were forced to drop hand grenades out of the windows, temporarily forcing back the enemy directly outside our building. At times, we were firing at insurgents muzzle-to-muzzle. I could literally have reached out of the windows and touched insurgents on the other side.

'I looked up to see the first A-10 coming in to make a gun run for our retrograde. I recall thinking to myself "why were the aircraft so low, and why did they have their lights on?" When I saw the massive amount of enemy tracer fire directed at the aircraft I realised they were trying to draw fire in order for us to move. All I can say is the combination of the flash of the guns firing, the sound it made and the way the ground shook around us gave me the first real indication that we were really going to make it back that night. Every time the A-10s made a pass it was like a rallying call for the section.

A-10C 79-0172 of the 75th EFS prepares to take on fuel from a tanker over Afghanistan on 12 December 2008. The aircraft was previously assigned to the Idaho ANG before moving to Moody AFB and receiving the 'Flying Tigers" famous sharksmouth marking *(USAF)*

'The selfless act of flying in so low with lights on drew most of the enemy fire that had been directed at us. They purposely put themselves in harm's way to allow us to move with our wounded. With deadly accurate and danger close fire they ceased a pursuing enemy determined to finish us off.'

When the 75th EFS departed OEF in March 2009 the unit was replaced by its sister squadron, the 74th EFS. The switch was primarily a personnel-only move as the aircraft brought to Bagram in late 2008 remained. However, six fresh jets arrived in late April, with four A-10Cs returning to Moody in early May. The 'Flying Tigers' would fly more than 12,000 hours, drop several hundred 500 lb pounds and fire more than 54,000 rounds of 30 mm ammunition during their six months in-theatre. On leaving Bagram in early August, the 75th EFS would be the last A-10 unit to inhabit the base for the next two-and-a-half years. ISAF turned its attention southwards. The A-10s did the same.

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CHAPTER THREE

KANDAHAR

Laden down with ferry tanks, RAF Harrier GR 9A ZG505 from No 1(F) Sqn departs Kandahar Airfield for the UK on 29 June 2009, thus signalling the end of Joint Force Harrier's commitment to Operation *Herrick* after five years of combat in Afghanistan. The RAF Harriers at Kandahar were replaced by Tornado GR 4s *(RAF)*

In mid-July 2009, 12 A-10Cs from the 354th FS departed Davis-Monthan AFB for a scheduled deployment to Afghanistan to participate in OEF. This EFS would not, however, be flying to Bagram, north of Kabul. The decision had been made a few months earlier to reposition the 'Warthogs' to Kandahar – a major shift in the location of the primary aircraft providing CAS in-theatre. The build-up of ISAF troops in southern Afghanistan had by then begun in earnest, and the desire to have CAS aircraft available meant leaving the Strike Eagles to provide much of the coverage for troops operating in the north.

The first physical step in moving the A-10s south occurred in early June 2009, almost four weeks before the 354th FS left Arizona. After five years of supporting Operation *Herrick*, Royal Air Force Harrier GR 9As (these examples were flown by No 1(F) Sqn) left Kandahar to return to their home base of RAF Cottesmore, in Rutland. Almost as soon as the last Harrier IIs had departed, the process of turning Kandahar Airfield into an A-10 base commenced.

Col John Cherrey had arrived at the airfield on 8 June to take command of the 451st Air Expeditionary Group (the USAF's host unit at Kandahar), although it would soon be upgraded to wing status on 2 July – the 451st AEW became the second expeditionary wing within Afghanistan. The 451st AEG had been a geographically separated unit of the 455th AEW prior to its establishment as a wing. The new 451st AEW would

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provide additional resources to combat the continued instability in southern Afghanistan.

Col Cherrey explained how the makeover of the former Harrier II ramp worked;

'There were a few challenges to get Kandahar ready for the A-10s. The British Harrier II ramp was where the A-10s were going to go, the RAF jets having been at Kandahar for quite some time. We had to dismantle the Harrier II ramp and expand it. The Red Horse [Rapid Engineer Deployable Heavy Operational Repair Squadron Engineer, which is the USAF's heavy-construction unit] team did an amazing job because it had to take down all the T-walls and hangers, as none of them were large enough to house an A-10 – it's a much bigger aeroplane than the Harrier II. The ramp also had to be redesigned and expanded to accommodate the larger A-10, as well as more of them.

Lt Col Michael Millen, CO of the 354th EFS 'Bulldogs', prepares to taxi out in his A-10C at the Kandahar Airfield at the start of a mission on 1 January 2010. The 354th EFS, under the command of the 451st AEW, was the first 'Hog' squadron to commence operations from Kandahar Airfield. There would be an A-10 presence at the base until early 2012, when the jets returned to Bagram *(USAF)*

'This work was going on right up until the first "Hogs" arrived. We were counting days and hours for the cure time on the concrete, as it had to be brought through the gates and inspected for force protection issues – that was a slow process. Unfortunately, the Red Horse troops could lay concrete down quicker than the local manufacturers could produce it. The concrete laying would go on all through the night, as the daytime summer temperatures in Kandahar were not ideal for such work. The whole thing took almost a month to complete, and we were still putting up new shelters and a phase hanger, as well as a fuel barn, on the eve of the jets' arrival. Tents were also erected for the aircraft engineers, and the operations building had to be re-wired and all the computers and communications equipment installed.'

Another challenge arising from the base swap was determining what equipment would stay at Bagram and what would transfer to Kandahar, as both the 74th and 354th EFSs would be conducting overlapping Air Tasking Orders (ATOs) for a brief period of time. There was insufficient equipment in-theatre to allow both bases to have a full set of everything that was required to keep an A-10 serviceable, so a calculated risk was taken when it came to locating the aircraft's oxygen generation equipment, for example. Munitions transfers also had to be made, as the A-10s had unique weaponry requirements that could not be met from stocks then held at Kandahar.

Lt Col Michael Millen was CO of the 354th EFS during its time in-theatre, and here he recalls the eventful start to the deployment;

'In the first 72 hours I was at Kandahar we had a rocket attack that did not kill anybody but definitely got my attention. Then a Mi-8 "Hip" helicopter owned by Russian company Vertikal-T crashed and killed 16 people. Finally, the very morning I stepped my first two pilots to fly a

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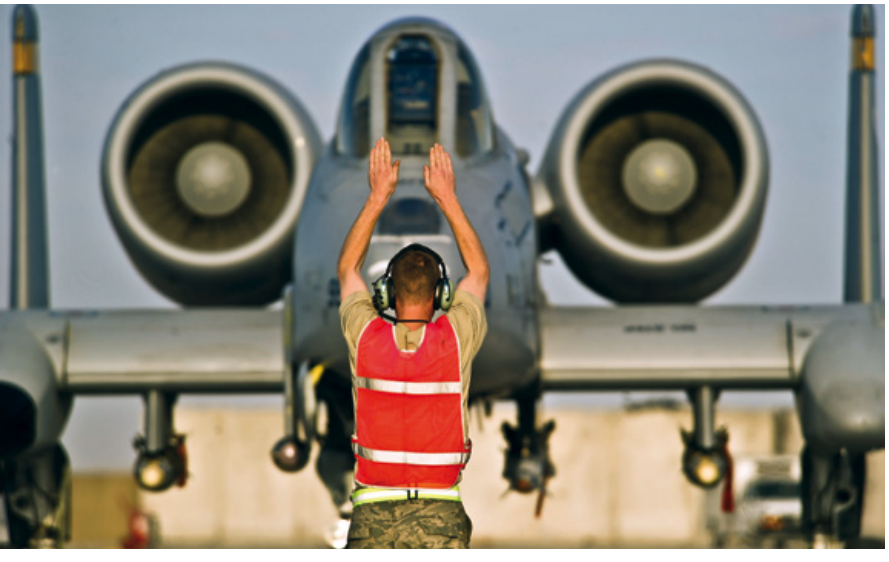
mission the RAF had one of its Tornado GR 4s crash. It had a burner blow out on takeoff, dropped the hook, skipped the wire and blew up within the airfield. All the munitions cooked off. That was how we got started.

'The lion's share of our missions were close to Kandahar, and that was where most of the kinetic operations happened. But the way CAS worked in Afghanistan meant you could end up anywhere in the country on any given day. I flew one mission up against the Iranian border, hit a tanker and then ended up on the Pakistani border on the same sortie. We focused mostly on what we saw as the challenge of finding and tracking individuals. The targets in Afghanistan tended to be personnel-driven – following personnel and, or, specific vehicles. To help with this mission we were the first A-10 squadron to deploy with the Sniper targeting pod. At the time it had much greater fidelity in the IR and TV spectrums, especially for pilots who had previously flown with the Litening pod. The challenge with Sniper was that the FOV was not as wide. Nevertheless, it was a great pod, and we were thrilled to have it.'

SURGE

The 354th EFS left Kandahar in January 2010, nearly a month after President Barack Obama announced his intention to surge American troops to Afghanistan to try to ensure that the fight for the country would not be lost. Nearly 30,000 more troops would soon begin arriving in several phases during 2010. This would take the total number of US military personnel in-theatre to more than 100,000 by the time the last additional forces arrived at the end of the year. The operational focus would shift to southern and eastern Afghanistan, with combat in the south taking place mainly in Helmand Province as ISAF forces entered former Taleban strongholds, especially villages in the Horn of Panjwai. These included Mushan, Talokan, Sperwan Ghar and Zangabad. The Taleban forces originated from these villages, and it therefore represented an area that was considered to be one of the most dangerous in Afghanistan for ISAF. In the east of the country ISAF forces would be used to control the flow of Taleban and foreign fighters across the porous Pakistan border.



A 354th EFS crew chief prepares to launch an A-10C on a late afternoon mission from Kandahar Airfield in December 2009. The 'Bulldogs' expended more than 37,000 rounds of 30 mm ammunition, 104 white-phosphorus rockets, eight Mk 82 airburst bombs, nine GBU-12s, 78 GBU-38 JDAM and one AGM-65E laser-guided Maverick missile during a deployment that began in mid-July 2009. The squadron also introduced the Sniper targeting pod to A-10 combat operations whilst in Afghanistan *(USAF)*

The 354th was replaced at Kandahar by another ANG 'Rainbow' unit, comprising A-10Cs from the 104th FS/175th FW of the Maryland ANG and the 184th FS/188th FW of the Arkansas ANG, the latter unit making its first combat deployment since transitioning to the A-10 from the F-16C. After four months at Kandahar the ANG units were replaced by the 81st EFS,

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which initially deployed with ten A-10s. The unit's ranks were further boosted by three aircraft flown in from its Spangdahlem home, as well as two A-10Cs from the Idaho ANG. The American surge was now well under way, and the demand for additional airframes to cover the ATO had increased.

In June 2010 there was a major top-level command change when Gen David Petraeus replaced Gen Stanley A McChrystal as the commander of US forces in Afghanistan. This followed President Obama's decision to seek McChrystal's resignation following publication of an unflattering interview in which the general spoke a little too frankly about his commander-in-chief.

During McChrystal's tenure in command of American forces in Afghanistan he had established a more restrictive policy of permitting air strikes by fixed-wing aircraft. This had certainly been the case during Operation *Khanjar* (Strike of the Sword), launched on 2 July 2009. The largest offensive operation in Afghanistan since the invasion in late 2001, *Khanjar* also proved to be the largest offensive airlift operation undertaken by the US Marine Corps since Vietnam. During many of the battles that were subsequently fought, the Marines relied primarily on organic attack helicopter support. This allowed the US Marine Corps to exercise what it called 'tactical patience' so as to reduce, or eliminate, collateral damage and civilian casualties. However, many Taleban and al-Qaeda fighters survived these engagements to fight another day as the new, restrictive rules regarding air strikes prevented them from being targeted.

A pilot from the Maryland ANG's 104th FS climbs out the cockpit of A-10C 78-0613 at Kandahar Airfield after arriving in-theatre on 13 January 2010 to commence a shared deployment with the Arkansas ANG's 184th FS *(USAF)*

Three months after Petraeus took over, and allegedly operating under the same restrictions on air strikes imposed by McCrystal, Operation *Hamkari* (Cooperation) would begin. Yet despite claims to the contrary, the limit on air strikes would not be the same as it had been with McChrystal in charge. In September 2009, 257 air strikes had been carried out by Coalition aircraft. After the start of *Hamkari* some 12 months later, September 2010 saw a 172 per cent increase in the number of air strikes flown – no fewer than 700 were undertaken. This represented a daily average of almost 24 across Afghanistan.

MSgt Craig May, 184th EFS weapon loader, secures a GBU-38 to an MJ-1D munitions handling and loading unit driven by SSgt Charlie Parker at Kandahar Airfield on 2 February 2010 *(USAF)*

Shortly after *Hamkari* had commenced, the 75th EFS flew into Kandahar with 18 A-10Cs. Unlike previous newly-arrived 'Hog' squadrons, it was immediately thrown into the fight. American troops were moving into places they had never been before, or at least not for quite some time. This meant

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Weapons crewmen prepare to load flare modules beneath the right wing of an A-10C at Kandahar Airfield. During the six months that the 75th EFS was at Kandahar, weapons crews and maintainers were the busiest members of a squadron that flew more hours and expended more ordnance than any other A-10 unit up to that point in OEF *(USAF)*

that resistance was both strong and sustained, particularly in the Helmand River valley. Indeed, the 75th employed half the ordnance it expended during its time in-theatre in this area. In fact during October, November and December 2010, the squadron would fire more weight in 30 mm cannon rounds than any other unit would drop in bombs during the same timeframe.

Pilot 1Lt Aaron Palan of the 75th EFS was making his first combat deployment at this time, having only graduated from the A-10 training course in August of that year. After flying the minimum number of sorties to become mission-qualified, Palan deployed with his squadron. On his first combat mission he fired his 30 mm gun just once, in support of a SOF team, following up a Hellfire attack made by an orbiting Predator. Less than a week later Palan would fly his fourth mission, and for his actions he would be awarded the DFC. He reported;

'My fourth sortie was on 1 October 2010, and I ended up being a wingman for the squadron's DO [Director of Operations]. We were tasked with supporting a SOF unit that had run into some trouble north of the Helmand River valley near Lake Kajaki. Somehow these guys had ended up stuck in an Afghan compound after a night raid, and it was now becoming daylight. The flight of A-10s that had been there before us had made a few employments but things had quietened down by the time we got there. We were now the only aircraft on site.

'This compound was in the middle of a huge field and the JTAC gave us a 9-line for some gun runs near a group of trees to provide suppressing fire. We needed gas so we started "yo-yo ops". I went off to the tanker first, and within 30 minutes I was headed back. As I got closer I could hear the SOF guys passing a 9-line for some Taleban that were emplacing a mortar. At this point my flight lead now needed to get gas, so I copied down the 9-line and the JTAC was asking for an LGB – a 500 lb

Five combat-weary A-10Cs of the 81st FS return to their Spangdahlem home on 27 September 2010 after spending four months at Kandahar Airfield supporting the US surge ordered by President Obama. This deployment, the fifth undertaken by the unit to Afghanistan, would also prove to be its last *(USAF)*

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GBU-12. I set up and dropped the bomb on the mortar site, and as soon as it hit the compound started taking fire from 360 degrees. I remember all the treelines lit up at once with muzzle flashes. The JTAC screamed on the radio that they were taking fire, and he started passing me 9-lines faster than I could write them down. I just started shooting treelines. I don't even remember how many passes I made, but it was a lot. I also fired some rockets and dropped another bomb as well.

75th EFS pilot Capt Aaron Palan received a DFC following a mission he flew in support of a SOF team near Lake Kajaki, north of the Helmand River valley, on 1 October 2010 *(USAF)*

'At some point they had taken a mortar round in the compound, and there were casualties. A MEDEVAC with some Apaches as RESCORTS [rescue escorts] showed up and right away started taking fire from another treeline. I strafed it immediately to protect the helicopters. They wanted me to talk the Apaches onto the spot where I had dropped the first LGB. I told them it would be faster if I just strafed the position, so I ended up strafing my own impact point. Then the Apaches started working that treeline themselves, while I worked the opposite side for about 15 minutes or so while the MEDEVAC was picking up the wounded. The helicopters departed and I strafed another treeline. Then it got really quiet, so I went back up to a high orbit. At that point my flight lead returned, and I told him I had no ammo left.

'I got a DFC for my efforts over the compound, but to this day I'm convinced that any A-10 pilot could have done that. *Any A-10 pilot would have done that.* I was just the guy there with the right training and the right aircraft. I've been asked if an F-16 pilot could have done what I did, and the answer is no. He wouldn't have had the training, the fuel or the weapons.'

Capt Aaron Cavazos was making his second OEF deployment with the 75th, and he would go on to fly some of the more unusual sorties that an A-10 pilot could perform in combat. As he said during an interview, 'It's all timing and there's no justice' when it comes to pilots being assigned their missions. Cavazos was, however, one pilot who definitely got the timing right.

As the surge spread, the lead elements of most missions reported to the Combined Joint Special Operations Task Force (CJSOTF), which had established compounds within Helmand in an effort to draw the Taleban out in force. The plan was to degrade the enemy to the point where conventional ISAF units could secure the area from the CJSOTF. This was the first step in the 'clear, build and hold' strategy now favoured by the Coalition in Afghanistan. It had been used successfully in Iraq, and now it was being used during the OEF surge.

On 12 October Capt Cavazos and his wingman, Lt Tanner Gibson, departed Kandahar. They were tasked with supporting one of the

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compounds recently established by the US Marine Corps Forces Special Operations Command (MARSOC). 'Within ten minutes of us checking in on station they started receiving fire, and "Halo 07", along with "Chosen 60", were asking for help', Capt Cavazos recalled. 'We did a couple of dangerously close GBU-12 drops and some strafing runs on tree lines. During those runs we were hit by small arms fire. Our run-in headings were limited due to the closeness of friendly forces and the presence of nearby compounds with an unknown populace.

'We needed gas so I sent Lt Gibson off to the tanker. While he was gone I ended up dropping another close LGB and the firing stopped. I tried to drop the bombs first, as I wanted to be able to save our 30 mm rounds in case the enemy got close to our troops. When my wingman returned he put a GBU-38 JDAM on a firing position 150 metres to the east of the compound.

'While I was at the tanker we had reports that the enemy were approaching the walls of the compound from the south. The Taleban were now within hand grenade range, and they were lobbing them at "Halo 07". I bustered [sped] back and they passed a 9-line. As I set up I realised the impact point was just 20 metres away from the friendlies. I had my wingman rejoin me – he set up in trail – and we were going to execute a wedge shooter-attack. I went straight from the tanker, some 40 miles away, into my gun run, having been given the 9-line brief en route. The Taleban fighters were so close to the friendly forces that both my wingman and I fired our weapons with friendlies visible in our gunsights. We made several more danger-close gun runs, and when the surviving Taleban forces retrograded south, "Halo 07" stopped receiving fire. I made two more passes on another tree line where Taleban forces were regrouping, then I went high to orbit.

'During one of my orbits I used the targeting pod to spot a group of middle-aged males who were leaving a building in a compound not too far from "Halo 07's" position. SIGINT [signal intelligence] sources began talking about a possible Taleban C2 [command and control] location within a mile or two, and I duly confirmed this following my sighting. It was soon acknowledged from the ground that the building was indeed the C2 compound. I passed a 9-line brief along, it was confirmed by the CAOC and we hit it with a 500 lb GBU-38(V)5. We destroyed it, SIGINT confirming that communications had ceased.

'This TIC began a string of 90 straight days where the 75th EFS responded to such engagements in Helmand.'

A few weeks after flying the mission that would lead to the

Awaiting end-of-runway final checks before taxiing out for takeoff, two 75th EFS A-10s are just moments away from commencing another mission. With much of the combat taking place in Helmand Province in 2010-11, the response time of A-10s to TICs was greatly reduced and the amount of time on station increased due to the proximity of Kandahar Airfield. The aircraft nearest to the camera boasts a discretely applied nine-bomb tally on its nose *(USAF)*

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award of the DFC, 1Lt Palan was in the air again for a night mission on 31 October. The flight of A-10s was tasked for split-operations, with the two 'Hogs' supporting two separated JTACs. At times during the mission the jets were six to nine miles apart, enabling a pair of A-10s to support both JTACs, but be far enough apart to fly independent orbits. During such 'split-ops', the flight lead could talk to one JTAC while his wingman spoke with the other. Although each pilot communicated via different frequencies, they could still talk to each other and were connected via the SADL. Palan subsequently reported;

Introduced into the US Army's arsenal in 2005 and the US Marine Corps' in 2008, the High Mobility Artillery Rocket System (HIMARS) is a C-130-transportable light multiple rocket launcher system that carries six GPS-guided rockets capable of travelling up to 70 km away with sub-munitions or a single 90 kg warhead. Here, a HIMARS launcher from the Wisconsin Army National Guard's Battery B, 1st Battalion, 121st Field Artillery executes a fire mission in Afghanistan in June 2013 *(US Army)*

'My JTAC was on the ground with about 20 other US Army soldiers, and it was late at night. I was working the targeting pod following their movements as they returned to a FOB after a patrol. I was providing overwatch with Sniper, looking ahead to make sure there were no potential ambushes. My JTAC had a ROVER [Remote Operational Video Enhanced Receiver], and he talked my pod onto a compound on their route. He indicated they'd taken fire from this location in the past and he wanted it checked out. I spent about 15 to 20 minutes looking at it and didn't see anything, not even a goat.

'As I was watching the area the ground force caught up to my pod. They stopped near to the compound to take a break, sitting down in a tree line about 20 metres to the west of it. I continued to move the pod around their position, looking at their flank and then back to the compound. It was at this point that my flight lead came on the radio and told me to get ready to copy the grids for a fire mission. The army was going to carry out a HIMARS [High Mobility Artillery Rocket System] strike, and I was being told to stay three miles outside the weapons' impact point. Usually they'd fire them over us, so I'd fly in a circle and the missiles would go over us before hitting the target. It was pretty common occurrence.

'The grids of the artillery mission were passed to me and I entered them into my navigation system. As I was doing this my pod was still looking at the troops. I slaved my pod to the coordinates I'd been given for the HIMARS mission, and it moved right back onto the compound I'd been looking at for the last 20 minutes – just 20 metres away from the troops on the ground.

'I thought "that's weird. Maybe I have entered the grids wrongly." So I asked my flight lead to pass the target grid again. I re-entered them and, sure enough, it was the same compound. Not only were there American soldiers right there, but there was nobody shooting from the compound. Nothing was going on. What I couldn't hear was my lead's conversation with the controlling agency for the HIMARS. He said that I had reported the proximity of US forces to the impact point, but the response he got was that

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they knew friendlies were a factor, but they'd been authorised to fire nevertheless. I needed to move out of the way now.

'I went back to the grids, confirmed them one more time and told my lead that I wasn't moving so they needed to stop the fire mission – Americans would be killed if I moved out of the way. They checked fire and it turned out that a previous patrol had called the fire mission into the artillery as an on-call strike should something happen in that area [the call Palan had received from the JTAC in the patrol he was supporting had inadvertently triggered the HIMARS strike that had been previously requested]. It was basically a miscommunication between a JTAC, who had passed through many hours ago, and the fire control desk that took the request to mean "shoot now should anything go down." Again, I can't take any credit for this, as it was down to my training as an A-10 pilot.'

CLEARING HELMAND

During 2009 ISAF had focused its efforts on clearing the Helmand River valley of Taleban and insurgent fighters. The CJSOTF was charged with moulding operations in this region, its primary job being to shape the battlefield so that as many enemy combatants could be eliminated as possible. Key elements in this strategy were the CJSOTF compounds located anywhere between five and 20 miles apart along the river valley. Once in place, the teams manning these compounds could press outwards, eliminating the need to take the fight to the enemy, for the Taleban were invariably drawn out into the open as they attempted to overwhelm the compounds. In time, the areas covered by the CJSOTF bases would expand, eventually coalescing.

This shaping of the battlefield was still in progress in the autumn of 2010, and it was happening directly beneath the pilots of the 75th EFS as they flew daily missions over the Helmand River valley.

In early January 2011 US Marine Corps and British Army units were working an area north of Kandahar as part of the reshaping process when they came under heavy machine gun fire. The belief was that the source was a AAA piece that had been moving around the area targeting Coalition troops, before it was carefully hidden after each engagement. Helicopters, including several British Apaches, had been fired upon and convoys had taken casualties on several occasions. Capt Cavazos, flying as 'Hawg 61', was tasked with a normal Joint Tactical Airstrike Request (JTAR) in the area in which the weapon was believed to be located. He recalled;

'About five miles north of where we were going a British Army convoy had been targeted by a "heavy

Personnel from a Marine Special Operations Team (MSOT) survey nearby terrain for activity in Helmand Province. One Marine is using the Polaris Sportsman XP 850 All-Terrain Vehicle to steady his weapon. MSOTs were major recipients of A-10 CAS in both northern and southern Afghanistan *(US Marine Corps)*

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machine gun", which had destroyed several vehicles. We now knew for certain that a big weapon was operating in that area. We took off and checked in with our JTAC, but there was nothing going on. As I worked my scan pattern out about four miles further north of the town we were watching, I came across a group of people in the middle of a small village. Normally, we don't see such things, so I became curious. I kept my altitude and pulled the engines back to make less noise.

'As I got overhead I could see they were all gathered around a big long tube on a trailer. When I switched from EO [electro-optical] to IR [infrared] on the pod, I could immediately see that the tube was very hot. I let the ground commander I was supporting know that I had possibly found something. I also let the DASC [Direct Air Support Center – the principal US Marine Corps aviation command and control system and the air control agency responsible for the direction of air operations directly supporting ground forces] know what was going on, and requested airspace in which to work, which I was given. I did one low quick pass and determined it was a heavy AAA piece, chassis mounted and about eight feet long. We were never able to confirm if this was the weapon that had targeted the British convoy, but it was only three miles or so from where the ambush had happened.

'I updated the ground commander and the DASC, letting them know what I'd found. It was at this point I nearly had a mid-air collision with two Tornado GR 4s that were working the same airspace looking for the AAA piece. The DASC operator was working alone, and had been unable to keep up with his assignments. I suggested that since I was FAC(A) qualified I could run the airspace for him. He quickly agreed, giving me the frequencies of everybody in the area. I then proceeded to de-conflict all the aerial assets in the airspace around me on behalf of the DASC.

'The ground commander told me that his higher headquarters didn't "own" the battlespace in which the AAA piece was situated, which meant that it didn't want to clear my request to blow it up. Each time I flew I kept a list of all the ground commanders, all the JTACs and all the frequencies that I'd used, so I knew roughly where these guys were situated in the Helmand River valley. I just started jumping around to different frequencies trying to find a ground commander who thought it was a good idea to blow this thing up. I knew the PID [Positive Identification] was going to be an issue, so I asked the DASC to relay via IRC [Internet Relay Chat] my request to any assets that could confirm that I was indeed looking at a AAA piece – I was asking for a UAV. They did eventually get one, but the RQ-11 Raven was unable to communicate with the ground commander as effectively as I needed it to. I did, however, find a SEAL team that was up in that area. The ground commander was "Trident 6", and he told me that if he could PID it himself, he was willing to "buy the bombs".

'By now it was dark, although there was a little glow in the sky off to the west. However, for all practical purposes it was dark. Nevertheless, I sent over my VDL [Video Down-Link] and ROVER feed to "Trident 6". I pulled my throttles back to idle and did a low-idle descent. I got to within a mile slant range, and from there you could see everything in extremely good detail. It was almost perfect. You could see the gun – it was a ZPU-1

A-10C 80-0208 of the 75th EFS flies over southern Afghanistan on a support mission for RC-South, the jet carrying a Sniper targeting pod, two GBU-12 500 lb LGBs, a LAU-131 rocket launcher, a SUU-25 flare launcher and at least one GBU-38 JDAM. The barren countryside, with numerous small, walled compounds that are routinely found in this part of Afghanistan, can be clearly seen below the 'Hog' *(USAF)*

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14.5 mm weapon – and two Taleban working on it. "Trident 6" quickly gave me a PID that it was indeed a AAA piece and then passed the radio over to his JTAC, who told me to standby. As we were working approval for me to use my 30 mm cannon, I passed the PID information fighter-to-fighter to my wingman. He replied that he didn't have his NVGs, which meant that from that point on he was pretty useless when it came to knocking out the ZPU-1. He could use his targeting pod to help me out and that was about it.

'As we watched, two Taleban fighters started wheeling the gun out of the village. That was good for me, as they'd been right outside a mosque, but I no longer had to worry about collateral damage. I'd been concerned they might tow it inside the mosque, as no one would have signed off on the attack. They began towing it toward the Helmand River instead. I began my attack run. As I slid into position, the two men began to walk back from the gun towards the village. That left me with a predicament – I wanted to target the gun, and I also wanted to shoot the two guys who knew how to operate the weapon. So I ended up with a night two target strafe. I put my sparkle [IR laser that can be seen through NVGs] on their location and shot them, then I turned back to the AAA piece. I was successful on both counts, but I wasn't content just firing 30 mm rounds at the gun. I wanted it to never work again. I kept the VDL going, therefore, in order to show "Trident 6" that there were no collateral issues near the target.

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'As I was coming back around for the second strafing run, I could see that my first pass had hit an area where a lot of the ammunition for this weapon had been stored. It had been set alight by the HEI [high explosive incendiary], and the fire began lighting off the 14.5 mm rounds. While I could tell where the ZPU-1 was, the fire was so bright that it was drowning out my HUD and IR sparkle. I had made a few more self-correcting gun runs before "Trident 6" came back with approval for a GBU-12. Here's where I made a tactical error. I come back around and dropped the LGB on ZPU-1, but a big fire that close to where you're dropping a laser-guided weapon will drown out laser energy. Without guidance the bomb landed ten metres short, so I came back around and requested a GBU-38. By the time I had flown another orbit the drop had been approved. The JDAM landed on the gun and completely destroyed it.

'It had taken a full 45 minutes to find a ground commander willing to take this ZPU-1 out. I did get into a bit of trouble for what my senior commanders thought was the use of too many weapons – the LGB and GBU-38 – when the latter should have been my first choice, given the circumstances. At the end of the day, however, that heavy weapon would not be firing at any friendly forces again.'

ANOTHER MOUNTAIN TO CLEAR

One of the key battlefield survivability features of the A-10 is the unusual location of its General Electric TF34-GE-100 turbofan engines. Their position, high on the aircraft's rear fuselage, decreases the risk of foreign object ingestion and reduces the odds of flak damage knocking out both engines. The TF34s can also be left running while the aircraft is being serviced and re-armed by groundcrews, thereby reducing turnaround time. Four bolts connect the engine pylons to the A-10's airframe. The power units also produce a relatively small IR signature, and the direction of the exhaust over the horizontal tail surfaces further shields it from IR surface-to-air missiles.

Since the A-10 has been in combat, several have sustained missile strikes to the engines during operations *Desert Storm*, *Allied Force* and *Iraqi Freedom*, yet they were all able to land safely. More often than not, the A-10's unique engine location has saved lives. One of them was that of was Capt Cavazos, as he recalled;

'1Lt Palan and I had been re-rolled to a TIC where two different SOF elements – a SEAL unit and an Army Ranger squad with USAF STS [Special Tactics Squadron] troops – were receiving sniper fire. Both elements were in radio contact with one another, and had narrowed down the source of the incoming fire to a rocky outcrop at almost 8000 ft on a 12,000 ft-high mountain. They couldn't see the shooter but could confirm that the bullets were coming from that spot. We didn't have any airburst Mk 82s left as we'd already employed them during a previous TIC. Our only remaining bombs were GBU-12s, and the odds of being successful with LGBs weren't optimal. We came up instead with a plan to put a 30 mm spread over the location. We set up for a shooter-gun attack down the valley. We shot one time and then came back around, having covered half the outcrop on the first pass.

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Maj Yann Malard of the 75th EFS conducts pre-flight checks on his A-10C, including ensuring that the guidance fins for the GBU-12 seen in this photograph have been attached properly. Malard, an *Armée de l'Air* pilot who had previously flown Mirage 2000Ds in OEF, went to Afghanistan for a second time with the 75th EFS during an exchange tour with the USAF. During his time at Kandahar, Malard flew 90 combat missions totalling approximately 400 hours *(USAF)*

'As I let off the trigger on my second pass, I saw that the master caution light had started flashing. I looked down into the cockpit and saw that my entire left engine instrument stack was completely lit up. Everything that could be lit up was lit up. As I continued to egress away from the target area, the left engine RPM had dropped to less than 20. That told me the situation with the powerplant was catastrophic. With the nose of the jet now approaching the horizon, I checked to make sure that my left engine fire handle was on, which confirmed that all my engine instruments were indeed working and that the TF34 was actually on fire.

'By the time I'd completed my safe escape from the area I was 30 degrees nose high. I traded all my excess airspeed for whatever altitude I could get, as I was surrounded by huge mountain peaks. The engine RPM was at zero and the engine temperature gauge was already pegged as high as it could go. If you have an engine failure it usually windmills, but in this case the motor had totally seized. Nothing was turning. By this time I pointed the jet further down the valley towards the only spot where I could eject without hitting rocks when I landed. I could have jettisoned all my stores – two GBU-12s, a rocket pod and two Maverick missiles – but I was flying over friendly positions, as well as civilian houses in the valley. I couldn't have lived with the idea that my ordnance had hit friendlies on the ground, so I continued flying, trying to gain as much altitude as I could.

'As I approached the ridgeline I noticed that it wasn't moving down – I was not going to clear it. In a first for me, I put my hands on the ejection handles and prepared to punch out. I waited a few more seconds so as to make sure I knew what I was going to do.

'By this point 1Lt Palan was done with his strafing run, and the JTAC was calling good hits on his attack. No one knew what was going on with me. I looked back and could see smoke trailing from my engine. Through my HUD, I noticed the ridgeline in front of me was starting to sink a little bit, which meant I could probably clear it if I managed my energy just right – I decided to stick with the jet. When I passed over the ridgeline my radar altimeter hit 40 ft. Once on the other side of this mountain, I pushed forward on the stick, trading altitude for airspeed. Only then did I call out to my wingman, telling him what was going on. I also checked in with the ground forces to confirm that they weren't taking fire any longer.

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'Now that I was finally clear of the immediate danger, I pointed the jet back in the direction of Kandahar – it would be an hour-long flight. At this point I was finally able to shut the engine down. I hadn't done this earlier as it was still producing thrust, even though it was burning. I needed every bit of thrust I could get in order to clear that ridgeline. My wingman did a battle damage check. The engine was done burning so, as I approached Kandahar, I decided I'd jettison my load-out as we had an area to do this south of the base – if I hadn't jettisoned my ordnance I'd have landed well short of the runway. I put the jet up on the right wing on my downwind so I could let off on the rudder a bit. By the time I was lined up on final approach I had to emergency extend the undercarriage as all the gear extension in the A-10 is powered by the left engine. As I rolled out along the length of it, I could see a two-ship of A-10s waiting for me to get off the runway as they were heading out to respond to a TIC.

'Once on the ground I was able to reach in and pull pieces of my engine out. There was only one hole in the cowling where a fan blade had punched through it. The next day I flew the same jet again! Maintenance had put a brand new engine on it and the "Hog" was ready to go. The external mounting of that engine saved that jet, and maybe me too.'

Showing all the signs of a well-used 'Hog', this 75th EFS A-10 was photographed on 26 February 2011 breaking away from a KC-135 Stratotanker assigned to the 340th Expeditionary Air Refueling Squadron. The jet displays not only its full weapons load-out but also the dirt and grime associated with almost six months of near-continual combat in Afghanistan. The return of the squadron's jets to the United States at the conclusion of the deployment in March 2011 was delayed by several days due to a lack of available tanker support because of the demand created by Operation *Odyssey Dawn* over Libya *(USAF)*

RUSH HOUR IN KANDAHAR

Capt Tomas Harney, pilot in the 75th EFS, was making his third trip to Afghanistan in just over four years when he arrived in-theatre with the unit in September 2010, his two previous tours having been to Bagram. The intensity of the fight during his deployment to Kandahar came as something of a surprise to him, and Harney was glad that the unit was operating from the new A-10 base during this key phase in the OEF campaign. He recalled;

'When we got to Kandahar it felt like it was where we should have been the entire time. Things picked up really quickly, and we maintained a heightened operational tempo into the winter months, when things had traditionally slowed down in the past. In November alone the squadron,

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which was primarily supporting SOF units operating in Helmand, fired roughly 64,000 rounds of 30 mm ammunition. That's the equivalent of two "Hogs" "Winchestering" [firing all their cannon rounds] a day! The aggression of Coalition forces in southern Afghanistan, with SOF leading the way to pick places to start the fight and conventional Marines and British forces following up, pushed the Taleban back up to the Kajaki Dam area. That's where the fight was happening when we left.

'We supported a number of night "infils" [infiltrations] near Kajaki. On some of them I'd never seen more surface-to-air fire from small arms and RPGs than when these guys landed in their helicopters. It was insanely intense. It seemed like the last stronghold of southern Afghanistan. Any limitations we had at Bagram, such as with the "Hogs'" speed, were eliminated at Kandahar. We took off and within minutes we were overhead Kajaki, or virtually anywhere else in the Helmand Valley. This meant that we needed only minimal fuel for recovery, so we could easily loiter over our troops for 2.5 hours. Tanker support was also usually available, allowing us to hang out even longer before returning to Kandahar.

'So much of what we did was with MARSOC units, although we did work with the regular army in the vicinity of the Arghandab River – a Taleban stronghold west of Kandahar. Once we moved in and started to stabilise the area the Taleban looked to disrupt ISAF forces undertaking this mission. A series of FOBs was set up, and I saw this area develop daily from the cockpit of my A-10. Just watching the progression of no-man's land, followed by more and more development, including the regular army moving unimpeded through the streets of Kandahar, was amazing.

'As the surge grew there were naturally more aircraft there to support the fight in almost every way imaginable. One mission in January 2011 really illustrated how congested the airspace around Kandahar had become. I took off with my wingman, 1Lt David Clemente, and we were going to support a regular army JTAC.

'Typically, we would hold over the Red Desert, south of Kandahar. From here you would try to find your own niche in order to enter the airspace. On this particular day aircraft were stacked every 1000 ft from 5000 ft up to 26,000 ft. It was nuts! I ended up asking the TOC [Tactical Operations Centre] where specific jets were on the radar picture in relation to me and my wingman. Sometimes the guys at the TOC were so busy arranging aircraft I'd have to call the approach or departure controllers at Kandahar and ask them if they were showing an aircraft at a certain altitude on their radar. I made a little block on one of my kneeboard cards and started writing down call signs, then I'd find a block that was open and we'd move in there. I also called the TOC and told them that if this thing went kinetic [ordnance needed to be employed], we'd have to shuffle some players out, especially UAVs, which usually inhabited the lower blocks of airspace. When we had to drop bombs or fire the cannon we tried to get the UAVs moved out over the Red Desert so that we could get to work without having to worry about flying into a drone.

'We got a call from one of the JTACs we were working with that a FOB had observed a guy trying to lay down an IED on a known main supply route. By the time we flew over to the area there was an OH-58D Kiowa on station, which had been watching this guy. He was definitely planting

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An A-10C of the 74th EFS flies over the Red Desert south of Kandahar as it approaches a KC-135 tanker. Most A-10 operations from Kandahar would commence over this area as pilots topped off their tanks and then planned routes to TICs that they had been tasked to support. The 74th EFS deployed with 16 A-10Cs and kept two additional jets from its departing sister squadron (75th EFS) to bolster its stable of aircraft in-theatre *(USAF)*

an IED, and he'd met all the OEF ROEs to be declared hostile. We started clearing out all the UAVs and MC-12 Liberty ISR aircraft holding below us so that we could get a clear view of the target. As the Kiowa got closer, this guy started to run, and he tried to hide in a ditch beneath a nearby treeline. We got onto the Kiowa's frequency, and he hovered almost over this guy and dropped a smoke marker right where he was hiding. Those Kiowa guys were something else, always being in the thick of the fight.

'We got clearance to employ. The plan was to roll in and mark the target with a WP rocket, as the smoke marker had cleared by the time we got clearance to shoot. 1Lt Clemente would strafe off the corrections from the JTAC on the rocket, as a lot of treelines in this area looked the same. We went in, and just as I was setting up my run in to lay down the WP I saw a white supply helicopter flying at my aircraft from right to left. If I'd pressed on I'd have hit him. As I bumped up over the helicopter, I told my wingman what I had seen, and he also bumped up. I then dived back down to a good altitude, rolled in and fired my rocket. Moments later my wingman rolled in with a good strafe and got the guy – the Kiowa crew was able to confirm it. We stayed on station to mark the IED, and by the time we went off-station an EOD [Explosive Ordnance Disposal] team was already out there to get it.'

In March 2011 the 74th EFS, also from Moody AFB, arrived to replace the 75th EFS. The new unit would pick up where the 'Tiger Sharks' had left off, the 'Flying Tigers' being in-theatre for the entire summer 'fighting season'. To the arriving 74th EFS pilots, there was no doubt that in Afghanistan, Kandahar was the place to be for an A-10 pilot. The 'full-throttle' fight that was now taking place in the Helmand Valley was

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virtually tailor-made for the jet, with much of the action occurring very close to the air base itself.

In order to be ready to respond to a TIC or a pre-planned mission as quickly as possible, many A-10 pilots were forced to immediately spiral up in altitude as soon as they had taken off from Kandahar. This in turn meant that they were almost directly over the base when they conducted their weapons checks and tested the functionality of their targeting pods. As the flying time to the target area was so short, there would be no opportunity to make the checks elsewhere. The heavy pace of combat operations would persist throughout most of the unit's time in-theatre. Indeed, it only slowed as the six-month deployment came to an end, American and ISAF forces having reclaimed significant territory in the Helmand Valley.

While the task of flying the 'Hog' was straightforward, living at Kandahar was a mixture of the surreal and the impossible. The airfield itself boasted what was called 'the Boardwalk', a series of shops and restaurants encircling a football field or roller hockey rink, depending on how the facility was being used at the time. Shops like Starbucks, TGI Friday's, Tim Horton's and an assortment of locally owned businesses provided an outlet for American and Coalition troops. Whether it was smoothies, flat screen TVs, cheap rugs or jewelry, it could all be bought here. Very often A-10 pilots would stop at Starbucks on their way to the other side of the base – not an easy journey – and grab some coffee before heading out on a combat mission.

1Lt Chris Palmer, who was making his first deployment to Afghanistan with the 'Flying Tigers' in 2011, explained the challenges of living and moving around Kandahar;

'Our operations building was on the west side of the base and we were living on the east side. We had a pretty long commute by bus around the base, and it easily took half-an-hour to make the trip. It was definitely the biggest pain of being on the base. There was no way you could walk it, and the bus schedule never seemed to work for us, so you always ended up being at work a few hours early. We'd drive by the ANA compound when heading to and from the operations building, and Afghan soldiers were always outside staring at us as we went past – that was unsettling. You just never quite trusted those guys.

'We'd surge every Friday, which meant we flew an extra two lines [patrols]. There were larger scale combat operations ongoing, especially the building of FOBs left and right. One day you'd fly and see them clearing a path. A few days later you'd fly over the same spot and the FOB would be there, barriers up and MRAPs inside. Most of the push to expand would occur at night. Almost every line we flew at night was in support of a task force objective that summer.

'My first combat sortie was flown at night on 22 March – it was to support a task force objective. In fact, in the first two months I was at Kandahar, I flew only at night. I was asleep during the day, so never really knew what anything looked like. We'd brief and usually not know where we were going, but we'd go with our standard night tactics, get the concept of fires from the CJSOTF and wait. Typically, something usually cropped up pretty quickly and it would be time to go. We had lines of communication dedicated to CJSOTF support, and much of the mission specifics would

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be passed to us en route. We flew blacked out and hit the tanker first to top off on gas. Kandahar was so hot, even at night, that we had to download a lot of our gas in order to keep our bomb load and a full drum of ammunition for the gun. Typically, we carried three JDAM, rockets, a targeting pod and the SUU-25 dispenser with LUU-19 flares.

'The general sequence was that there would be a stack of players above the event. Initially, you were offset and holding ten miles or so from the objective – usually suspected Taleban fighters occupying a building in a village – so you didn't "burn" [alert] the target. Typically, an AC-130 gunship would be stacked immediately below us, with ISR platforms – SIGINT and UAVs – above. And everybody was talking to the JOC [Joint Operations Center], from where CJSOTF would run the mission. Controllers in the JOC could download real-time video from targeting pods there was a JTAC running the stack.

An OH-58D Kiowa helicopter flies down low in its natural habitat as it skims the Afghan terrain whilst performing an armed reconnaissance mission. This Kiowa is armed with a 0.50-cal machine gun and a rocket pod. Kiowa crews were frequent targets of enemy fire, and as a result suffered numerous losses during OEF. One such loss occurred on 22 April 2011 when a Kiowa was brought down following an RPG strike on its tail boom *(US Army)*

'As the helicopters came in with the mission force they'd typically infil right to the objective. They'd land in the middle of the village and go right to the house. This moment in the mission was a very sporty time for everybody because it was usually when everything happened. We'd provide overwatch, although at night it was pretty rare for us to shoot the cannon or drop ordnance as the AC-130s were there, as were the Apaches. They seemed to be the primary shooters, although the troops being inserted loved us for our LUU-19s, especially when they arrived at their LZ [Landing Zone]. These were four- to five-hour sorties, and we'd be there for three hours. After receiving the order to exfil [exfiltrate], the team would hike out of the village. This tended to be the hairiest part of the mission for the helicopters, as everyone now knew they were coming. Fortunately, there were a lot more assets in-country at that time providing overwatch coverage for the troops and their helicopters alike.'

FALLEN ANGEL

The most memorable mission for 1Lt Palmer came during the night of 22-23 April 2011, when, as a member of 'Hawg 71' flight, he flew as wingman to the squadron's weapons officer, Capt Ruston Traynham. Both pilots would provide a graphic demonstration of the A-10's effectiveness when flown to its strengths, as Palmer recalled;

'Launching with very little notice, we were tasked with supporting an infil within the Khost bowl, in the Sulaiman Mountains. We had to get gas on the way up there and deal with some weather while on the tanker – the latter meant it took longer to get gas, and we were pressing to get the required location in time for the infil. We actually had to get the tanker to drag us so that we could make it on time.

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'For this infil there were about 50 to 60 friendly troops on the ground, and there were two separate objective areas – they were essentially co-located within a couple of hundred metres of each other. Many individuals ran from the target area and took off up the steep terrain along the valley once the troops moved in. We now had to protect our forces, while also tracking the guys who were running away. There were several assets on station to help track the "squirters", providing IR sparkles for the Apaches and U-28s [of the USAF's Special Operations Command].

'Two-and-a-half hours into our mission there was a call on the Guard [aircraft emergency] frequency that an OH-58, flying from a FOB up north, had crashed. The call was from "Dude" flight, a pair of F-15E Strike Eagles. It said, "Any A-10 Sandy-qualified pilot [a specially qualified and dedicated "Hog" pilot trained in search procedures, survivor location and authentication techniques, and helicopter support tactics] contact this call sign on this frequency." It was obviously an urgent situation.'

Ninety miles away an OH-58D Kiowa Warrior had been brought down by RPG fire (other reports claimed the helicopter had flown into a cable strung up between two mountains) near the town of Gamanduk, in Kapisa Province north-east of Kabul. 1Lt Palmer would remain on-scene and help deal with the 'squirters', who were high-value targets. Tracking the enemy with the help of a U-28, and using his IR pointer, Palmer was able to mark the targets for the Apaches' gun runs. It would be 7.5 hours before he returned to Kandahar. Traynham recalled;

'The first thing I did was get permission from the JTAC I was supporting to leave 1Lt Palmer there alone. Once the JTAC agreed, I immediately started contacting the ASOC, JOC, JPRC [Joint Personnel Recovery

Running upwards of 15 lines a day, seven days a week, maintenance was one constant on the flightline and in the hangers. When at home in the US, most A-10 squadrons would fly about 7000 hours per year with 24 jets. During a six-month deployment in Afghanistan, most units exceeded 10,000 flying hours with 12 to 18 aircraft, putting a strain on 30-year-old airframes. This aircraft from the 74th EFS was photographed in the final stages of its pre-mission preparation on 2 September 2011 *(USAF)*

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Center] and the CRC [Control and Reporting Center] to start pulling information. Although there was not much available, I coordinated with these agencies and was re-tasked to support them. I also pulled another A-10 two-ship to meet me overhead where the helicopter had been shot down.

'It was apparent en route that no one was in "control", yet the ASOC and CRC were beginning to flood the AO with assets. I used the Guard frequency to de-conflict assets and ensure I had the appropriate assets where they were needed. I was discovering that the area was being flooded with aircraft with no plan on who was in control. There was a B-1, the Strike Eagles and manned and unmanned ISR platforms as far as the CRC knew. I started telling the CRC where I needed all of these platforms moved to so I could effectively control the CSAR [combat search and rescue] effort. They were unwilling to move people around, however, being determined to keep control the way they saw fit. So that was when I got onto the Guard frequency and started moving platforms to where I needed them.

'I moved the B-1 and pulled in a tanker to support us, giving him an altitude block to operate in, and kicked out a few of the manned ISR assets that I didn't have the airspace for. At this point the CRC ordered the Strike Eagles to leave, despite the F-15Es having the best SA on the downed helicopter as they had the OH-58 in their targeting pods. The CRC wasn't comfortable with what I was doing – I was definitely outside my lanes, but for the right reasons.

'Once on station, I quickly found the smouldering helicopter visually. I then began to divvy up threat search priorities for the A-10s, which had arrived at almost the same time as me. I knew there were helicopters in the area, but I just couldn't get in touch with them. I could see ground fire, and some helicopters returning fire, but still didn't have comms with any of them at this time. While trying to get a common frequency for all the varied helicopter traffic in the area, I was eventually able to corral everyone, including two HH-60 Pave Hawk rescue helicopters, six to ten AH-64s and numerous UH-60s, onto a common frequency and start integrating efforts. It took about 30 minutes to figure out what was going on.

'This happened as the last HH-60 came under fire and was forced to immediately divert. It was at this point I learned that there were PJs [USAF Pararescuemen] stranded on the ground – they'd been inserted

The Ammunition Load System, or 'Dragon', is one of the most important pieces of equipment on the flightline for A-10s. With its ability to simultaneously remove empty casings and replace them with fresh 30 mm shells, aircraft can be quickly turned around for the next mission. This particular A-10C (78-0688) was one of six 74th FS jets that deployed with the 75th FS to Kandahar in September 2010, and remained in-theatre when the former unit replaced the latter in OEF the following March *(USAF)*

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prior to my arrival – and the helicopters that had brought them in had been shot at and had had to leave. Once in contact with the PJs, I got a visual on them and established some TRPs [tactical reference points].

'It wasn't too long afterwards that the PJ I was talking to started taking effective direct fire from a Taleban fighter in a large tree just 50 metres from his position. Within 30 seconds of him screaming on the radio, I had WP rockets in the area, de-conflicted from the Apaches. The firing stopped for about 15 seconds and then started again 45 seconds after the rocket pass. I followed my wingman, who was the flight lead from the A-10s that had joined me, and put a total of 300-400 rounds into the area. The direct fire ceased, while un-located distant "potshots" continued from a village situated on the banks of a nearby river. I tasked the Apaches with searching the village for the shooter, fearing great potential for civilian casualties from fixed wing fire on an unknown location inside an "urban" area.

'The constant influx of assets continued, meanwhile, with the next to arrive being a two-ship flight of UH-60s carrying a DART [Downed Aircraft Recovery Team]. They checked in on the helicopter common frequency I was using to announce they were going to insert a team. I told them, "absolutely not – all we have on the ground are two PJs, along with the Kiowa crew, one of whom has already died, and we have already had three helicopters shot up trying to get them out." I didn't want numerous friendly positions to complicate the situation any further. The DART team eventually left, citing bingo fuel.

'At this point things settled down. The PJs on the ground were calling out more "potshots", but it sounded as if they weren't too worried. Then another DART team arrived and, again, I turned them around. Shortly thereafter another helicopter checked in using the call sign "Avalanche." This was a call sign I'd never heard before. I asked who they were and the response was they were a UH-60 "comms bird" with the brigade commander on board. Having politely acknowledged them, I asked the pilot to leave the area and not to talk to me any further. About 15 minutes later, during an orbit, I saw two UH-60s across the river from the PJs – about a klick-and-a-half away [1.5 km] – lifting off the ground. They informed me that they had just "infil'd" a DART team. I immediately asked for the DART team's call sign, their location and the frequency they'd be working. I was told the UH-60s didn't know any of that, and they were out of gas and had to go! They had failed to tell me they were on their way in, only getting in touch on their way out.

'Four additional A-10s had now showed up, so there were seven on station, but I needed gas. Fortunately, the tanker I'd arranged for earlier was still overhead at 19,000 ft. As soon as the DART was down, I tried getting a frequency for them but nobody, not even the other army helicopters in the area, knew how to talk to them. So I started going through my Smart Packs trying to find a different TOC that might have a frequency for them. I finally got in touch with a JTAC at Bagram who had it. All the while I was heading to the tanker. Once I had the frequency I tasked the four additional A-10s, which had just checked in, to start talking to the DART team to figure out what was going on. I never did contact the DART team directly, leaving it to the other A-10s, while I kept my SA focused on the PJs.

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'I subsequently found out that as soon as the 16-man DART had gotten off the Blackhawks they had taken heavy direct fire, resulting in two soldiers being mortally wounded. The four A-10s shot 4000 rounds of 30 mm ammunition in support of the DART team, keeping the Taleban fighters pinned down.

'Although I was now on the KC-135's boom, I was still running the CSAR effort over the Kiowa. At the same time I was talking to the JTAC back at Bagram in the TOC, and he told me that the army was about to insert a Pathfinder team into the area. I told him to stop this as we didn't need more friendly troops on the ground. However, the army was going to do what the army wanted to do. When I dropped back down from the tanker, I could see a CH-47 Chinook on a ridgeline to the west of the PJs – "here we go again" I thought to myself. The JTAC passed along my frequency to the Pathfinder team, who actually had a JTAC with them on the ground, so I began talking to them right away. The first thing they wanted to know from me was the location of the PJs. I spent the remaining time on station trying to get all three elements on the ground to merge without shooting each other up as they converged from three different directions. At this point more UH-60s began showing up, throwing what they call "Speed Balls" – rucksacks of ammo – down to the DART team in order to re-arm them.

'The wingman I had acquired from the first two A-10s that had come to help was the squadron DO, and he eventually sent me home after I'd been airborne for more than nine hours.'

In late May 2011 1Lt Palmer was involved in another mission that, while not of a kind unheard of for the A-10, was one seldom performed. Operation *Treeline Black* would involve 'Hogs' preparing the battlefield for a coordinated effort by ground forces. A large treeline was determined to contain a number of fortified fighting positions that would present challenges to a forthcoming army operation. Palmer recalled;

'There were four A-10s to be used and we each got four JDAM – 16 bombs and three targets. When we manned our aircraft we knew exactly where we were going to strike, and therefore had all the targeting information we required uploaded into the jets. As we closed in, the JTAC cleared us and we made one pass, dropping two JDAM each. We then turned around and dropped the last two. It was a bit anti-climactic, and after that we pressed on to a different tasking.'

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CHAPTER FOUR

CAS RESET

In October 2011 the 75th EFS was replaced by a TFI unit that mixed active duty, AFRes and ANG squadrons. With the Michigan ANG unit being the lead squadron for the first 90 days of the deployment, the outfit duly became known as the 107th EFS. Here, A-10C 80-0265 taxis in at Kandahar on 22 November 2011 after an uneventful mission – none of its ordnance appears to have been expended *(USAF)*

In October 2011 the 74th EFS returned home, and the A-10s subsequently went back to where they had started – Bagram air base. The 'Flying Tigers' were to have been replaced by a Total Force Initiative (TFI) unit comprised of personnel from active, reserve and guard squadrons, with the lead outfit being the 81st FS. However, due to its NATO commitments to operations *Odyssey Dawn* and *Unified Protector* over Libya, the squadron could not support two real-world combat taskings at the same time with a Primary Aircraft Authorization of only 18 A-10s at Spangdahlem.

Even though *Odyssey Dawn* had ended on 31 March, there was still a need for alert jets to be based at Aviano, in Italy, until *Unified Protector* finished on 31 October. This meant that rather than being the supported unit, the 81st became a supporting one, providing eight pilots and six A-10s for the deployment to Afghanistan. Besides the contribution from the 81st FS, the Michigan ANG would deploy six jets from the 107th FS/127th Wing at Selfridge ANGB, while the AFRes-manned 303rd FS/442nd FW at Whiteman AFB and the 47th FS/917th Wing at Barksdale AFB would each send three A-10Cs.

Four months earlier, on 22 June 2011, President Obama had announced that the United States would begin withdrawing its forces from Afghanistan. There was initially a token drawdown of 650 troops, but by the end of 2011 10,000 soldiers had been sent home, with more to follow to complete the cycle from surge to drawdown. The president also announced that US

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troops would hand over responsibility for security operations to the Afghan government on 31 December 2014, essentially ending the involvement of American forces in OEF. As a result, the operational focus for the A-10s would shift again.

Lt Col Joshua Ruddell was DO for the 81st FS and lead officer for the Spangdahlem detachment, which would spend its entire six months in Afghanistan supporting the other units. For the first 90 days the operation was under the control of the 107th EFS, followed by the 303rd EFS and 47th EFS, respectively, for 45-day blocks.

The early part of the deployment coincided with the onset of the winter fighting season when the tempo of combat activity usually declined. 'We had a few days here and there with nothing employed at all', Ruddell explained. 'We did a lot of overwatch, convoy escorts and looking at named areas of interest, so it wasn't that kinetic. The majority of our kinetic operations were undertaken around the Horn of Panjwai.'

Lt Col Anthony Roe was the 303rd EFS's DO during the unit's TFI deployment. As one of the first A-10 pilots to arrive at Bagram in March 2002, he had seen operations in-theatre change significantly over the several deployments he had completed during the ensuing ten years;

'At Kandahar, which has a huge runway, I could be getting ready to take off behind a Coalition F-16, which was in turn waiting for a civilian-contracted 747 to depart, while behind me there was some kind of drone ready to go. The base was also continually buzzing with the coming and going of helicopters of all shapes and sizes. The airfields in Afghanistan were big to start with, and they have only gotten larger. As such, the airspace has become really busy – maybe, in some cases, too busy.

'By late 2011 in Afghanistan, more aeroplanes didn't always mean more air power. The demand for full motion video, and all sorts of

A 451st Expeditionary Aircraft Maintenance Squadron crew chief waits for the pilot's call to pull the chocks from the main wheels of A-10C 80-0262 at Kandahar Airfield on 20 January 2012. The aircraft's four GBU-38s still have their arming pins in place as well. TFI pilots struggled to drop bombs on targets during this period of OEF following the introduction of stricter ROE in-theatre, ground force commanders pushing instead for strafing passes to reduce the chance of collateral damage *(USAF)*

Members of the 107th EFS pose with A-10C 80-0265 at Kandahar Airfield in late December 2011, shortly before turning over the OEF mission to the 303rd EFS, which would take the reins for the next 45 days. Most members of the 107th would return home within days of this photograph being taken, but their six jets would remain in-theatre until March 2012 *(USAF)*

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A Royal Australian Air Force Heron UAV is towed from its hanger at Kandahar Airfield and across the ramp towards the runway for another sortie over Afghanistan. As the OEF mission grew, the number of aircraft operating in the country also increased, as is evidenced by the AH-64 Apache, UH-60 Blackhawk, Kalitta Air Boeing 747 freighter and AC-130H Spectre gunship also seen, in the photograph. For most A-10 pilots, the greatest danger they faced was collision with another aircraft or, more likely, a UAV during flight operations coming into and out of the airfield or over the target area *(USAF)*

aircraft pushing that video and NTISR, had filled the skies. More aeroplanes meant more complicated issues. As a pilot, you had to be as proactive as possible. When you were sitting in the stack for hours on end there could well be problems if somebody left their assigned altitude block. Sometimes, when we flew these missions, the A-10s would only have 200 ft in which to hold. There were so many aeroplanes circling over the same spot that it really became restrictive. In an environment where the air threat was more robust you couldn't have done this, as there would have been no room to evade – a mid-air collision with another jet in the CAS stack would have been inevitable. For us, the biggest threats as the war expanded were traffic patterns and airspace congestion over the target area.

'There were several TICs I responded to in 2011-12 where we'd be ready to shoot or drop and all of a sudden you'd see a shadow below you. Only then did you realise that there were American helicopters down there who weren't talking to you. I'd have to go to my JTAC and ask him if he knew he had Apaches on scene. The response would be, "Well, you need to tell me about these guys and what frequency they're on."

'The ROE had become restrictive, which meant that although we could see our troops getting shot at, we couldn't get approval from the ground forces commander in the area to hit the target. Collateral damage and civilian casualties were the primary concern at this point. If anything happened the Afghan government seemed more than willing to present the situation as American forces acting with reckless abandon.

'Often, we wouldn't be allowed to use the right weapon for the right tactical situation. We were pushed to use the gun, and very rarely allowed to use a 500 lb bomb. In fact, at one point we even stopped carrying GBU-12s and low collateral damage weapons like the GBU-38 version 5 – the latter was a composite bomb body that made a lot of blast but not much fragmentation upon detonation. It wouldn't destroy the structure of a building but it would kill enemy combatants. We eventually resorted to taking HUD and targeting pod footage to some of the FOBs to give the army ground force commanders a better understanding of what that weapon could achieve and why the JTACs wanted to use it.

'Often, a bomb would have been a better option. However, there was a stigma attached to any weapon that was possibly going to do more damage than a 30 mm round. This in turn meant that numerous missions we flew weren't as successful as they should have been because we couldn't employ

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the right weapon. As a CAS pilot, I didn't want any of those insurgents to live. If one of them got away, who's to say he wouldn't be able to plant an IED or conduct some other type of attack on US or ISAF forces that resulted in friendlies being killed possibly the very next day? It didn't sit well with A-10 pilots who had to watch these guys walk away – guys who should have been killed.'

BACK TO BAGRAM

The possibility of moving the A-10s from Kandahar to Bagram had first been explored in the autumn of 2011 at the end of the summer fighting season. As the patterns of CAS were examined and trends established, the move found widespread favour at ISAF headquarters and the International Joint Command (the command echelon below ISAF, and consequently the operational commander). The HQ element of ISAF's Regional Command – East (RC-East) was among the most interested in getting A-10s closer to the action, as it wanted CAS that only the 'Hog' could provide. Before the CAS Reset a number of missions were flown into RC-East that, for an A-10 launched from Kandahar, involved a lot of 'drive time' just to reach the target area. It was quickly understood that the smarter option would be to base the jets closer to the AO and allow them to spend more time on station providing overwatch for troops on patrol.

Brig Gen Thomas Deale commanded the 451st AEW at Kandahar at this time, overseeing, among other things, A-10 combat operations from the base. He explained;

'We started to get more and more requests for specific tasking for the A-10, and its capabilities, in the east of the country. If you look at a map of Afghanistan, the south is dominated by flat open desert, while the east is filled with significant mountainous features. There are also weather patterns unique to these areas that challenge the ability of any aircraft to provide direct support to our ground units. Nevertheless, there was a requirement to operate under the weather in tight valleys in the east. Although other airframes were available to the Coalition in-theatre, and they could have performed such a mission, they weren't optimal for it.

'Operations in the east were also about securing the border, making sure the LOCs [lines-of-communication] stayed open and the guys in COPs [Combat Outposts] and FOBs along the border and along Route 1 were as well protected as they could be. Keeping LOCs open to conduct retrograde operations was going to be very important as the drawdown began. At this point the eastern part of Afghanistan was a better target set for the A-10 and its capabilities, with both JDAM and, most importantly, the 30 mm cannon.

A GBU-36 JDAM is carefully unloaded from an A-10C at Kandahar on 2 December 2011. While displaying the unmistakable nose markings of the 47th FS 'Terrible Termites', the jet was one of three committed to the TFI unit, which at this time was designated the 303rd EFS *(USAF)*

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Pilots and command staff of the 303rd EFS pose in front of A-10C 79-0109 on 30 December 2011, shortly after taking charge of the TFI deployment at Kandahar. This aircraft was one of three jets sent by the AFRes unit from Whiteman AFB to Afghanistan *(Anthony Roe)*

'The CAS Reset coincided with growing concerns – there was always concern – about collateral damage and, more importantly, civilian casualties. We really wanted the precise and responsive employment of munitions with minimal frag patterns that would have the desired effect when supporting our troops.

'Several other factors came into play when the decision was made to move the A-10s back to Bagram. Other NATO and Coalition partners were already operating F-16s out of Kandahar, so moving US F-16s down there gave us an economy of scale. It meant centralising F-16 operations both logistically and operationally, thus providing our Coalition partners with a USAF unit that was operating a similar airframe.

'As we looked to the future, the plan was to reduce operations in the south first and move to the areas in the north and east, centred on Kabul. These were going to be our primary operating locations, so it made sense to pre-position long-term assets at Bagram in support of that movement. When I left Kandahar we were expending ordnance in a direct support role maybe once every ten sorties. That significantly increased as we repositioned up to Bagram, and can be attributed to our changing dynamic in the fight.'

The 107th EFS turned over the deployment to the 303rd EFS in December, and the latter unit would oversee the move to Bagram. It would also execute the CAS Reset, as well as fulfil the ATO as created by the CAOC. Lt Col Ruddell was project officer for the move, and he explained how it worked;

'What we had to do was find a way to move bases that had as little impact as possible on the ATO. Fortunately, little fighting traditionally took place in December. Some of the jets flew with external tanks in ferry condition up to Bagram from Kandahar. The tanks could have been loaded into a C-17 or C-130, but logistically, and for the safety of those tanks, it was better to just fly them up there. We flew some missions en route, including an OEF CAS sortie, and then landed permanently at Bagram. We had an 11-day plan for the base swap that called for a decrease in the overall number of sorties flown, while still covering the CAS mission and being able to configure jets and move them while the reset was going on. This all happened while Whiteman was handing over A-10 control to Barksdale. The 442nd FW maintainers were the ones who led the charge in getting jets up to Bagram.'

Capt James Chevalier was maintenance officer for the 303rd EFS, and it was his job to get the aircraft and parts from Kandahar to Bagram. 'The planning started well before the 303rd took over', he explained. 'My maintenance counterpart was Maj Curtis Ring from the 107th EFS.

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He had to sketch out a starting point, and he sent a site survey team to Bagram. He brought us up to speed when we arrived in December 2011. We had frequent meetings to figure out a process for transporting cargo, for splitting our personnel and for preparing Kandahar for F-16s, while continuing daily flying. There were similar meetings held at Bagram.

'Just 45 days after we arrived at Kandahar we needed to start moving personnel and equipment to Bagram. We moved 305 personnel and 200 tons of cargo over four days. We had to carefully select who would depart for Bagram in order to receive incoming aircraft, while still keeping sufficient personnel at Kandahar to support the unit's heavy flying schedule. Some people had to switch shifts or travel to Bagram at the end of a shift so as to start preparing for the imminent arrival of A-10s. We also had to be careful about the order in which the cargo departed Kandahar, as we still had aircraft to support around the clock at the base. I can remember that some mission-critical parts – both for the F-16 and the A-10 – had to be shuttled back and forth between the two bases in order to repair aircraft during the transition. Cargo and personnel movements were broken up into 20 flights between Kandahar and Bagram.

'The A-10s' daily sortie rate decreased only slightly during this transition. We maintained an 85 per cent FMC [Fully Mission Capable] rate throughout the transition. The day after we received the last group of A-10s at Bagram we were back up to a full schedule.'

Brig Gen Thomas Deale (right) accepts the guidon from Lt Gen Tod Wolters during the 455th AEW change-of-command ceremony at Bagram AB on 1 March 2012. A-10 pilot Deale had previously led the 451st AEW at Kandahar Airfield, and he had followed the jets back to Bagram. Wolters was his CO during this period, being Commander, 9th Air and Space Expeditionary Task Force-Afghanistan and Deputy Commander-Air, US Forces-Afghanistan *(USAF)*

The irony of ferrying A-10s up to Bagram loaded with fuel tanks and travel pods while still armed with a fully loaded gun was not lost on Lt Col Thomas McNurlin of the 303rd EFS. 'We would take some of the weapons off and put on travel pods', he noted. 'With all of my worldly goods – including my luggage – that I had with me at Kandahar, I flew a combat mission and then landed at Bagram!'

In an unusual move, Brig Gen Deale, who had relinquished command of the 451st AEW upon the departure of the A-10s from Kandahar, was then appointed commander of the 455th AEW at Bagram. This happened almost as soon as the CAS Reset had been completed, as Deale explained;

'The wing commander at Bagram was picking up his second star. He'd been a Strike Eagle pilot, and the plan was to withdraw the F-15Es at Bagram in March and he'd take up his new position in April. After two weeks' leave, I took the wing at Bagram. Shifting commands like this wasn't the norm, but I had a great CO in Lt Gen Tod Wolters [Commander, 9th Air and Space Expeditionary Task Force-Afghanistan and Deputy Commander-Air, US Forces-Afghanistan]. I was confident I could re-establish the A-10 at Bagram, not only in an operational sense, but also in the frontline by supporting units out in the field.

'One of the other things we did during 2012 was to reposition the Strike Eagles outside Afghanistan in an effort to reduce the footprint of US forces as directed by our national leadership. With the F-15Es gone, we'd now

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pulled out a third of our CAS assets. We prided ourselves in having a specific time to respond to a TIC. When we pulled out a third of that response, you'd naturally think the response time would go up. However, we were able to change the force presentation and the tasking process all over the country, but most importantly in the east. We shifted our strategy a little and ended up reducing the TIC response time by 20 per cent, despite having a third less assets in-country.

'The way CAS assets had previously been tasked in-theatre meant that we rarely got the chance to pre-plan direct support operations against targets prior to taking off. Our game was responding to TICs and providing air support as and when it was required. It was a little bit like playing whack-a-mole. We had no idea where the fight was going to develop that day, and once it did, our job was to get there as quickly as possible. When we had an abundance of CAS assets in-theatre, and could respond to TICs virtually anywhere in Afghanistan, we weren't very efficient in pre-positioning assets in possible hotspots when you looked at the bigger scheme of things. We were providing armed overwatch for patrols outside the wire or NTISR to units out in the field, basically flying holding orbits waiting for something to happen.

'However, when working with IJC [ISAF Joint Command] from late 2011, we had to position our jets where the fight was most likely to occur. We still fulfilled overwatch and NTISR requirements, but in a manner that kept our CAS assets where we expected combat actions to erupt that day.'

The 47th EFS took over the deployment in early February 2012, and it would remain in charge until being replaced the following month by the 104th EFS. The latter squadron was a combined unit comprising A-10Cs from the 104th FS of the Maryland ANG and the 188th FS of the Arkansas ANG. Maryland would be in charge for the first 90 days, while Arkansas would cover the final 90.

THE VALLEY

On 28 June 2012 two A-10 pilots from the Maryland ANG would fly a mission in a valley in eastern Afghanistan that proved the decision to move the 'Hogs' back to Bagram was the correct one. The jet's proven ability to operate in restricted air space, fly under the weather and hit the enemy hard like no other CAS aircraft came to the fore during this action.

Lt Col Paul Zurkowski and Maj Christopher Cisneros were getting ready to launch as 'Hawg 55' and '56' that day to support a SOF mission on the Afghan–Pakistan border. They had been briefed on the ongoing operation and received a weather update, which promised optimum conditions. The last time Zurkowski and Cisneros had flown together, the forecast had been for terrible weather that quickly cleared. On the 28th the opposite would happen.

'Hawg 51' and '52' had taken off three hours earlier, having been briefed for the same operation. After supporting both it and another TIC, they were low on fuel when 'Hawg 55' and '56' arrived on station to relieve them. 'Hawg 51' stayed to conduct a proper handover with the incoming pilots, while '52' hastily returned to Bagram. The SOF team on the ground,

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consisting of 90 soldiers who were moving to a position from where helicopters would extract them, was receiving sporadic fire as Zurkowski and Cisneros arrived overhead.

'There is a major river running along the border with Pakistan, and it has steep ridgelines on either side that get steeper as they go north', explained Zurkowski. 'We were flying over the southern end of that mountainous area, so the ridges weren't as high, but they were still pretty significant. There was also a tributary with multiple branches extending east into Pakistan. That tributary probably fed the river we could see from much higher terrain, rising up to about 8000-9000 ft.

Lt Col Paul Zurkowski (right) and Maj Christopher Cisneros stand in front of one of the A-10Cs that they flew on their 28 June 2012 mission. Zurkowski was CO of the 104th EFS at the time, the unit sharing the OEF deployment with 184th FS. Both pilots were from the 104th FS of the Maryland ANG *(USAF)*

'By the time we arrived on station the weather was already coming down from the mountains and pushing the cloud layer lower and lower. Our airspace was rapidly being reduced.

'When we had taken off this event had been classified as a TIC, and when we arrived overhead there was an AC-130, MC-12 and a B-1 on station, along with our three A-10s. This was quite a stack of aeroplanes, with weather broken at about 12,000-14,000 ft. Our A-10s were at 10,000 ft and under.'

'At this point the weather wasn't too bad', Cisneros recalled. 'It wasn't raining, and it was hot. The weather we flew through to get to the TIC was pretty stormy, with a lot of rain. And that weather was moving towards the operational area. It was coming our way.'

'We'd been given graphics of the area prior to departure, and they had colour-coded towns and buildings', Zurkowski continued. 'The reality, unfortunately, was that all the towns and buildings were a similar colour once we reached the target area – as the weather got worse it became even more difficult to figure out the "blue" buildings from those that were "purple". How the area was laid out and which graphic went with which town proved to be very confusing, as the river that dominated the area had many "Y" junctions where there were multiple dwellings. Fortunately, "Hawg 51" was able to give us a good description of the area before he had to head back to Bagram.

'As the weather continued to deteriorate, the assets on station started to leave because they had reached their operational minimums meteorologically. The MC-12 remained on station the longest, providing us with support. However, after 45 minutes all the aircraft had departed due to the decreasing cloud ceilings.

'By then the ground forces had completed their mission and were trying to get to a helicopter landing zone [HLZ] to be picked up. They expected resistance, so the army had pre-positioned helicopters at a nearby FOB close to the river, west of the ridgeline that encircled this whole valley.

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'There was a ridgeline that terminated at one of the "Ys" in the river. There was a rock quarry at the base of the ridgeline's spine, and the troops were navigating around it and heading up the spine to the top of the ridgeline to the south. That's where the helicopter pick-up zone was. At this point we were using our targeting pods to keep an eye on the friendlies and scan up the ridge toward the HLZ. With 90 troops on the ground, we had our work cut out for us keeping track of them all with the pods. Simultaneously, I was trying to build up our SA on the nearby towns.'

'At this point we were looking at our fuel situation', Maj Cisneros recalled, 'and Lt Col Zurkowski sent me off to get gas early, anticipating it might take longer for me to get to the tanker because of the weather.'

'With these operations you normally pre-fuel before you go to the AO, or mid-vul [Vulnerability Window – i.e. the time period a flight is planning to be on station] tank', Zurkowski explained. 'In this case the planned refuelling point was about an hour into the vul, and I elected to send Maj Cisneros about 15 minutes early as I knew it might take longer for him to get to the tanker. Visibility had not yet decreased, but the ceiling had dropped and a very large thunderstorm was building over the ridgeline to the north. It was getting darker and starting to rain north of that ridgeline. At this point Maj Cisneros was cleared to get gas, but he came back and said the tanker was stuck in the south and wouldn't be in the refuelling area for another 15 minutes. I brought him back into the target area to help support the egress to the HLZ until he had to depart. At the original air refuelling time he left again to meet the tanker.'

'A large thunderstorm had developed between me and the tanker', Cisneros recalled. 'They were trying to refuel F-16s but not having much luck. By the time we found some clear space it took longer than normal to hit the tanker. I spent an hour completing the refuelling evolution because of the weather – it would have normally taken half the time.'

'The weather really started to deteriorate and the enemy tried to use this to their advantage', Zurkowski explained. 'There were enemy fighters on the ridgeline north of the target area, and as soon as the rainstorm rolled into the valley they started firing at the SOF troops from the north and west – the latter immediately requested a show of force. I flew a low pass from south to north up the tributary between the friendlies and the enemy. Remaining at low altitude in the valley, I headed west.

Lt Col Zurkowski points to where his A-10 was hit by ground fire during his low-altitude runs under the weather in a tight valley and during a rain storm. Already patched, the A-10 is ready to fly its next mission *(USAF)*

'At that point the fire from the west ceased, but it continued from the north. We worked a 9-line for a 30 mm pass and, using one of the colour-coded graphics, they talked my eyes onto the target location with coordinates derived from the graphics. Unfortunately, the target was right at the edge of the graphics. On my first pass I rolled in to put a rocket down to confirm we were talking about the same spot. They corrected me from my rocket up the ridgeline about 100 metres. I followed up with a 30 mm strafing pass, and then it started to rain hard. Visibility was dropping and the ground troops were still taking fire.

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I made three more passes, with the cloud base having now descended to around 3000 ft. Despite the heavy rain, I had enough visibility from the information in my HUD and, luckily, had spent more than an hour in the target area, so I knew all the terrain. My level of SA was enough to keep me away from the ground and still allow me find the target. The weather had now descended to below the mountain peaks to the east along the Pakistani border.

'We had a mark Zulu [a reference point seen in the HUD and moving map that allows the pilot to ascertain where the gun was previously employed – this really helps the SA of pilots providing CAS, as it gives them a geographical point from which to set up another attacking pass], which allowed us to see the last impacts. I actually went to mark Zulu to improve my SA and reference my last impacts according to the corrections from the ground. It was difficult for me to see where my last impacts had been due to the weather.

'After the second pass I realised I was burning more gas than when I was in the hold overhead, and I knew I wouldn't make it to the tanker. I decreased my bingo down to 2200 lb, giving me 1000 lb to get home – I'd land with minimum fuel, which was 1200 lb. After each pass the JTAC was making minor corrections. In an effort to break contact with the enemy I made three more gun runs, emptying it. After the last pass I was down to 1800 lb of fuel, having burned 400 lb past my bingo. I now had to climb to altitude and head directly back to base. I talked with Maj Cisneros while he was on the tanker, trying to give him as much information as possible while I was working the 9-line and the troops were taking fire. Now I needed to get back to Bagram as soon as possible.

'I left the target area with 1800 lb of fuel, and I was about 100 miles from home. Basically, that worked out at ten pounds per mile, so I needed 1000 lb to get back. I climbed to 30,000 ft, where I burned less gas, and started an idle descent. I could have saved more gas if I'd started that descent earlier, but there was weather and terrain below me so I elected to stay high longer. I landed at Bagram with 900 lb of gas.'

As Zurkowski was leaving the area Cisneros was coming back in. He recalled;

'The ground forces were without air support for five to seven minutes, and when I arrived back on-scene the weather was far worse than when I had left. With storms right over the valley, I thought I wouldn't be able to help. Almost in passing as he left, Lt Col Zurkowski said "the weather's bad but they need your help. Try to get in low in the valley." That's what I did.

'The JTAC said he needed ordnance and gave me a rough position. He wanted me to drop a 9-line as soon as I got there. I was assessing the weather at first, eyeballing how low the ceilings were compared to the heights of the mountains. It was raining very hard and I had very limited visibility to the front. I could see fairly well out to the sides of the aeroplane looking down, however. The peaks of the mountains were very much in the clouds. I kept trying to use the targeting pod – the key tool of the A-10C – but the weather was getting so bad I had to revert to "old school" CAS – looking out the cockpit to figure out where the friendlies were by eyeball, and building the picture up from there.

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A 104th EFS pilot sits in the cockpit of A-10C 78-0613 as the aircraft is prepared to taxi from its parking spot to the runway at Bagram AB on 25 May 2012. The distinctive 'Hog' art of the Arkansas ANG A-10s differed markedly from the undecorated noses of the Maryland ANG jets *(USAF)*

'It was the worst weather I'd ever flown through, and conditions looked even worse in the valley. The biggest thing I noticed when I got back was that the ground situation had changed significantly. First and foremost in CAS with the A-10, you're always worried about where the friendly positions are in relation to the enemy. I wanted to make sure I knew the exact location of the ground forces. I was doing that while trying to fight through the weather and talk to the JTAC. The situation on the ground was getting much worse as they were now under intense fire, so I had to decide how much I was prepared to risk in order to help these guys. I started off with rockets to pinpoint the enemy's position, as I needed some SA before I started employing 30 mm rounds. Because these guys were under such heavy fire, they were slow in giving me the corrections for my rockets. Being on my own, my CAS efforts were almost futile.

'My JTAC was on and off the radio a couple of times before he told me to stand by, saying he had to sort himself out first. He'd been shot, although I was unaware of this, and he had to hand the radio off to someone else to talk to me. I ended up talking to three different controllers while I was out there that afternoon.

'My first thought about risk management was that I didn't want to hurt these guys with my ordnance, but as the situation got worse and worse I thought they might not have a lot of time left to fight it out. Luckily, at this time, two "Hog" pilots called me on the inter-flight frequency and said they'd heard there was a situation going on here, and they asked if I needed any help. I told them to get here as soon as they could. The weather was still terrible, so I had to exit the valley to get a visual on them and they had to fall into formation to follow me in. There was no way we could have rejoined in the valley due to the heavy cloud cover that blanketed the area. Once they were on scene it was easier to provide effective CAS, as they could correct my rockets.

'I'd been there for 25 to 30 minutes before the two A-10s arrived, and I stayed another 35 minutes or so. We each made three 30 mm strafing passes, and fired some rockets as well. We had a difficult time locating targets as our JTAC – the third one I had worked with – was coming under heavy fire. He said he wanted us to employ on a ridgeline that had been the enemy's last known location. There was a lot of discussion about whether the Taleban had since moved, and where they were in relation to the JTAC. All three of us tried to work this out, talking to each other while trying to build each other's SA. Once we were relatively confident where the ordnance was wanted, we executed a very rapid series of 30 mm strafing attacks on the ridgeline.

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'The JTAC was calling every one of the passes danger-close. I didn't have a lot of confidence that I had his exact location, so I used a graduated approach with rockets to verify it. We then began the strafing runs on the enemy position. This broke the contact and allowed the helicopters to return to the HLZ to evacuate the wounded personnel, although initially they couldn't land due to the heavy ground fire. Two A-10s escorted them up the river valley and, as I was leaving they were hoisting the wounded up into the Blackhawks. By the time the mission was over ten A-10s had supported the operation, which continued late into the night.

'We got to meet all three JTACs, two of whom were in hospital, having been shot. Hearing things from their perspective about how we saved their lives by staying out there in bad weather was the highlight for us. It was eye-opening.'

'In our pre-mission brief I'd said that if we couldn't get to the tanker we'd provide as much support in the AO, then come back to Bagram and get more gas', Lt Col Zurkowski explained. 'So that contingency was playing out in my mind on my way back to base. I was trying to coordinate with the supervisor to try and get a hot pit so I could get gas and get back out, knowing Maj Cisneros was on his own. I let the ASOC know my wingman was there as a single-ship, and that they needed to re-roll an A-10 two-ship to the TIC. I was out of 30 mm ammunition, but still had six rockets and four JDAM left. During my rocket pass I'd seen tracer fire come up at me, but I didn't realise I'd been hit. When I went through de-arm they found two holes in the aeroplane. That alone would have precluded me from going back.'

Both pilots would be awarded the DFC with Valor for their actions that day.

FORT SMITH TAKES OVER

Lt Col Brian Burger was flying 'Hawg 52' on 28 June 2012. As the incoming 184th EFS CO, he was actually on one of his LAO flights when Zurkowski and Cisneros penetrated the valley under the weather to provide life-saving CAS.

'The main body arrived in mid-July, so July to September was the window we were covering', Burger recalled. 'Since we were a guard unit [184th FS/188th FW], we had pilots from Idaho and Fort Wayne helping us round out our personnel commitment. As a squadron, we were operating in the northeast. We ended up expending more than 65,000 rounds of 30 mm ammunition and dropping 250 500 lb bombs along the eastern border with Pakistan.

'We operated under a tight ROE. A mistake at tactical level could have strategic level implications. We would often be in the vicinity of a TIC. I've been in this business for years, so I know that our A-10 is slow. However, it has unequalled deterrent value. There were many occasions when enemy fighters chose to lay low and not show themselves when they knew we were in the vicinity. This was particularly true along the Pakistani border, where things would quiet down considerably when we showed up. If that was what it took to stop the Taleban from attacking the friendlies, then that was a positive.

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Although it displays the markings of the Maryland ANG's 104th FS, this aircraft is about to fly a mission from Bagram AB as part of the 184th EFS. During the 2012 deployment the 104th FS contributed eight A-10Cs while the Arkansas ANG's 184th FS sent ten 'Hogs' to Afghanistan for the six-month mission *(USAF)*

'Our ability to deter the enemy came to the fore during an army "exfil" operation that I supported in the northeast area of the country, far away from the troops' FOB. We were tasked with escorting the helicopters that were carrying out the "exfil". The troops weren't in an active firefight, but the feeling was that something was brewing – the army was in a hurry to get the guys out. The weather was closing in, but I really don't think they'd have been able to operate a faster aeroplane under the weather in those very steep canyons doing helicopter escort. Although we're faster than a helicopter, we can still operate in tight areas. We didn't employ on this mission, but the Taleban knew we were there and chose not to fight.'

One of five pilots from Fort Wayne flying with the 184th EFS was Capt Jeremy Stoner, who was making his second deployment to Bagram – he had previously been in-theatre with the 172nd EFS in late 2007 when Battle Creek deployed to OEF with the first A-10C. 'Bagram had changed a lot since I was first there, as had the missions', Stoner recalled. 'The tempo had really begun to slow down and the ROE was now becoming a little more restrictive. We spent most of our time flying overwatch missions, scanning NAIs [Names Areas of Interest] and providing convoy escort.

'I had one mission in support of a SOF team southeast of Bagram that had come under heavy fire and been split up. We had two different locations for them across a small riverbed, both groups moving and engaging at the same time. When we checked in there was a B-1 on station, and he was holding fairly high trying to sort things out. They had him do a bombing run, and that was a very lengthy process. When we checked in the JTAC was clearly pleased to have A-10s overhead, and he told the B-1 to standby. He said, "I want you guys in here right now with guns and rockets." He was very excitable, having just taken casualties. We had to work pretty closely with him to calm things down a bit so that we could collect the necessary information for our attack.

Personnel from the 184th EFS stand in front of A-10C 78-0613 at Bagram AB shortly before turning over the mission to the 354th EFS. Lt Col Brian Burger, CO of the 184th EFS, stands at the front *(Brian Burger)*

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'We put down a couple of rockets to confirm we were talking about the same things, and confirmed that what we were going to be shooting at was still a hostile target. There was a dam in the area – it was more like a small bridge that a vehicle could drive over, but it was still damming quite a bit of water. That was where some of the enemy fire was coming from. The JTAC requested that we take out the dam. We asked him to hang on while we talked this over. My response was, "As much as I'd like to take out that dam for you, if I do so it will be my last sortie. Let's back this up a bit." He was very excited when communicating over the radio, and that gets you pretty excited as well. However, you have to make sure that all the appropriate safety checks have been made before any ordnance is expended.

'We started by using the rockets to mark the different enemy locations, as well as to determine the exact friendly locations. Different assets began showing up on station soon afterwards – mostly ISR – and they provided assistance by collecting targeting information. A couple of Apaches arrived too, but they didn't have sufficient fuel to stick around for very long. During the 90 minutes we were there we had three different target areas to watch, including a suspect vehicle, a gun emplacement and a few troop positions. The JTAC was trying to take care of his guys, keep SA on the guys he was separated from and determine where all the enemy positions were. We were able to get eyes on the Taleban and engaged them with several strafing passes, thus helping to sort things out. Nevertheless, this fight would go on for three days.'

When the 184th EFS departed Bagram the unit was succeeded by the 354th EFS, which undertook the OEF mission from October 2012 through to April 2013.

Soldiers from Company B, 1st Battalion, 187th Infantry Regiment, 3rd Brigade Combat Team, 101st Airborne Division (Air Assault) watch as an A-10C flies low under the weather and drops flares in a show of force during Operation *Sham Shir* (Sword) near Shahak, Afghanistan, in April 2013. The 'Hog's' ability to operate under low cloud ceilings and in tight valleys, combined with the pilots' desire and willingness to get down into the fight, has made the A-10 the favourite CAS aircraft among ground troops in OEF *(US Army National Guard)*

A-10C 80-0187 of the 354th EFS lands at Bagram AB on a runway wet with melting snow on 17 January 2013. The winter is traditionally a much slower fighting season in Afghanistan as the weather precludes insurgent movement, especially in the northern areas of the country. Reflecting this, 80-0187 has returned home with its ordnance still aboard. The reduction in the number of US forces in-theatre resulted in a consequent decline in the number of A-10 missions being flown in 2012-13 *(USAF)*

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CHAPTER FIVE

TO THE END

Seen shortly after arriving at Bagram AB on 25 April 2013, A-10C 81-0964 of the 74th EFS taxies towards the runway as an OH-58D Kiowa takes off behind it. Suspended from weapons station 11 is a Litening Gen 4 targeting pod, the 74th EFS being the first A-10C squadron to employ the improved system in OEF. The aircraft is also carrying an SUU-25 flare launcher, two GBU-38 JDAMs and two GBU-12s *(USAF)*

In April 2013 the 74th EFS returned to Afghanistan for its fifth and, most likely, last deployment to OEF. The squadron arrived equipped with the latest iteration of the targeting pod, Litening Gen 4, which had much better target-tracking capability, enhanced zoom, a wider FOV, shortwave IR laser imaging sensors, colour symbology and a more stable IR pointer. It was also a lot easier to use.

Despite the improvement offered by the targeting pod, there was another new addition that would produce the biggest difference in shortening the kill chain. Lt Col Michael Curley was the DO for the 74th EFS, and he considered the unit's single most important piece of new equipment to be the Scorpion Helmet-Mounted Integrated Targeting (HMIT) system. Indeed, the 74th gave the HMIT its operational debut in OEF. Describing the training and changes required to make the system effective, he said;

'ACC wanted to give us at least two weeks to train prior to deploying, but we actually got more than that. We started training in December 2012 when the equipment arrived for us to use – it was accompanied by several qualified instructors, who delivered the training on the system and checked out our own IPs. The rest of the squadron flew with it in January and February. During this period we had to work through equipment compatibility issues, as not all of our jets were hardware-modified for the helmet. In fact it took a full two months to get all the aeroplanes suitably configured – both in terms of software and hardware – and the mission

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training done. Our pilots averaged ten flights with the HMIT before deploying.

'The aeroplanes received their software updates before all the hardware modifications had been completed. It would take a few weeks to modify them all, and, starting in September 2012, we flew them two at a time out to the AMARG [Aerospace Maintenance and Regeneration Group] Desert Speed Line at Davis-Monthan AFB, where they'd put the hardware in. The latter took the form of an additional cable in the cockpit that pulled the data from the jet's main computer and transmitted much of the information currently in the HUD and the multi-function colour display and projected it onto the helmet-mounted monocle.

Lt Cols Stu Martin (left) and Michael Curley hold an 81st FS 'Panthers' flag as they stand in front of A-10C 81-0981 on 10 May 2013 – Martin had just completed his 'fini-flight' with the 74th EFS. The aircraft had arrived at Moody AFB from Spangdahlem two weeks before the 74th's deployment to Bagram, which meant that there was no time to change its markings prior to departure. Both officers had previously served as lieutenants with the 81st FS, flying together in Operation *Allied Force* over Serbia in 1999 *(Michael Curley)*

'This was the final piece of the PE modification programme for the A-10. The 1760 databus gave the C-model "Hog" both JDAM GPS-guided munitions and the ability to receive targeting information in the cockpit via data link, which projected aim points onto maps and overlays. We had nothing like this in the A-model. The advent of Scorpion also brought our helmet back "outside the cockpit". As an A-10 pilot, your biggest asset is target SA thanks to the superb view we get from the cockpit of the jet. Thanks to the new helmet-mounted sight I could look out the side of the canopy and not have to position the aeroplane's nose over the aim point in order to receive targeting information via the HUD. Now all I had to do was slave my targeting pod onto what I was looking at. I could also see electronically what others in my flight were looking at, viewing imagery generated by their targeting pods.

'We didn't have access to such information in the A-model, and that slowed things down. In the A-10C we had the information, but it was all presented via the "four-by-four" [multi-function display] screens. This meant that we had to match the data on the screens with what we were looking at outside the cockpit on the ground. A lot of that work was done through the HUD, as that was where the target projections for the weaponry were

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displayed. With the HMIT, I received information about where the targeting pod was looking, or where my wingman was looking, and I could see it displayed forward of the wing line [via an optical system featuring a light-guide optical element that provides a compact colour collimated image]. No matter where I looked I could see that information.

'If I had a convoy I wanted to find using the HMIT, I'd plot its last known point on a map, pull my coordinates and tell my targeting pod to look there. Without the HMIT, I'd have had to point the aeroplane in the direction of the convoy and work through a series of events that would have taken at least a minute, and probably more, before the vehicles were located.

'The biggest advantage of the helmet for me is that I just put the crosshairs on my target, pull one of the switches down for a second and the pod focuses directly on the spot I am looking at. It's so much quicker and more efficient than how we previously worked. The helmet display is all-colour, so all the symbols we see are coded. That helps provide awareness of the things you're looking at. There's much faster prioritisation, and if someone else puts out a threat call, such as an AWACS, and places it on the data link, it'll automatically appear on my display.'

Chris Palmer (now promoted to captain), who returned to OEF with the 74th EFS for the second time in two years, agreed with Lt Col Curley when it came to the benefits of the helmet-mounted targeting system;

'Before the arrival of the HMIT, the most difficult thing was just trying to figure out where your targeting pod was looking. You could kind of look at the screen and correlate it with what was outside. However, with the helmet-mounted targeting system you knew exactly where the pod was looking. It was awesome. To put a grid into my targeting system that allowed me to look outside and instantly see the location of a building made "information flow to weapon employment" much faster.

'Although the weight of the modified helmet was not substantial, it was bulkier and had more moving parts that were very delicate. We had some maintenance growing pains at first, which is normal for any new item of equipment. The only real problem was that these serviceability issues occurred at Bagram, rather than at home, as we had only received the HMIT shortly before we deployed from Moody.

'Everything I put on the moving map I could see in the helmet, including NAIs. On one mission I checked in with a British JTAC who had been operating in the area for so long that he had NAI's 1 through 6! He just knew that if he was going to get shot at it would be from one of those areas. His familiarity with the region meant that all we had to do was show up in a new AO, talk to the JTAC, put those NAIs into our system and look outside. I knew right away where everything was, and could see it there on the helmet monocle. When I had previously been in Kandahar using the Sniper pod, it was like looking through a soda straw to find a little intersection in a city, correlate that on the cockpit displays and then look outside and try and find the same spot visually.

'Where the HMIT really paid dividends was when performing a moving target strafe. In the past, at the altitudes we'd be holding, you'd not really be able to see anything. You'd have to point your aeroplane at the ground to know where the guys were. With the HMIT I could see

Wearing a Scorpion HMIT, a 303rd EFS pilot sorts out some paperwork prior to taxiing out. The helmet-mounted sight is the latest addition to the A-10's technological update that began with the PE upgrade. Despite the A-10 now being more capable than it has ever been, the type's future remains the topic of fierce debate between senior USAF officers and the US government *(USAF)*

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where my wingman's pod was looking and get a laser spot that would display in my helmet. I knew right away where the Taleban motorcycle or vehicle was, and I could roll in and strafe it. The HMIT helped to improve both your target ID and attack planning, thus minimising the potential for collateral damage.

'By the spring of 2013 Bagram AB had become very busy as the retrograde by ISAF troops had forced operations into certain areas. This in turn meant that the airspace we were operating in was congested. Things got worse when the main runway at Bagram was periodically closed. We were then forced to take off and land on what was essentially a taxiway (Taxiway Zulu), limiting operations. We had to reduce the number of laser-guided bombs we could carry and download some fuel in order to operate safely from the taxiway. Such restrictions hampered operations.

'There was also a significant reluctance on the part of ground commanders to authorise strikes during the retrograde. There were times when it was obvious that those being targeted were certainly bad guys, but ground force commanders now tended to withhold strikes. They were trying to encourage the ANA and Afghan National Police to handle their own situations, instead of always having us resolve everything with CAS. When we did get into situations, and it was a TIC, it seems we'd employ more. Overall, however, this deployment was much less kinetic than the one I made in 2011.

'The one memorable mission I recall from 2013 occurred in late September, when my flight lead and I were flying as "Hawg 51" and "52". We had been tasked with performing an early morning patrol, and such missions were usually uneventful as the enemy was rarely active immediately after sunrise. The first thing we had to do was to provide overwatch for the exfil of a 30-strong SOF unit and 30 ANA troops that were on a nighttime operation that had ended up running into the morning – exfiling during the daytime wasn't ideal. Once overhead, I could see the MRAPs. With my helmet sight I was able to slave my targeting pod onto the vehicles, having visually acquired the friendlies within seconds. They were southeast of Jalalabad airfield.

'As the troops were exfiling along a wadi, they were ambushed from the other side of the valley by upwards of 40 Taleban fighters. There were more muzzle flashes than I'd ever seen during daylight hours. My flight lead rolled in and put a WP rocket down. This wadi ran north to south and provided a very clear delineation of where the enemy and friendlies were. They were close to each other though – within 50 metres. Almost immediately the SOF and ANA troops started taking casualties. We commenced our attack runs, and soon both of us had "Winchestered" our guns, firing more than 2000 rounds of 30 mm ammunition in six or seven passes. We kept shooting and they kept fighting – it was an urgent situation.

'I actually had an HEI round detonate prematurely in front of my aeroplane. It almost looked as though my "Hog" had been hit by groundfire. It fragged the front of my jet a bit. Had this situation not been as desperate I'd have had to remove myself from the fight so that my flight lead could conduct a BDA [battle damage assessment] of my jet, but the urgency of this fight meant that we had to continue pummelling these

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An A-10C of the 74th EFS flies low over a foot patrol from Company A, 3rd Battalion, 15th Infantry Regiment, 4th Infantry Brigade Combat Team, 3rd Infantry Division in Wardack province, Afghanistan, on 21 August 2013. Such missions provided invaluable security not only to the soldiers but also to the civilian population *(US Army)*

guys. We were shooting within 30 to 40 metres of the friendlies, and the helmet sight helped us to pinpoint their location in relation to the enemy.'

Lt Col Curley also used the HMIT in combat during the deployment when he engaged a moving motorcycle, thus validating the system's effectiveness in hitting a moving target. He explained;

'I was the flight lead, with Col Michael Millen [now 455th AEW Operations Group commander] as my wingman – he was performing his helmet qualification flight. We headed down to the Khost bowl following reports that some Taleban fighters in the area had a [7.62 mm] PKM light machine gun. The rounds fired by this weapon could penetrate some of our vehicles, and the enemy was using the machine gun to take potshots at our convoys. One of the army's Aerostat balloons [part of the Persistent Threat Detection System] was tracking these guys, and it put us overhead their last known position in a border town. The weather was rapidly deteriorating, however, with clouds and rain rolling in from Pakistan.

'On my way down through the cloud I received a hand-off from the previous A-10s, who we were replacing in position. We picked the Taleban up and started watching their movements, trying to assess when would be the best time to hit them so as to minimise the risk of collateral damage. They were carrying the machine gun and handing it off from motorcycle to motorcycle as they travelled around an urban area. We were hoping we could get approval to strike these guys with the ROE, but they needed to be away from the town proper and have the weapon in their hands.

'To keep it simple Col Millen worked his pod, which allowed me to line up an attack run. He kept his pod on the motorcycle, transmitting digital information of where it was looking. I could see this in my helmet display and I could see where the motorcycle was moving on the ground. I was able to set up on a weapons delivery, put the gun on them and shoot them.'

FROM LEAD TO SUPPORT

As the American footprint was being reduced and the fight against the Taleban was being transferred to ANA troops, challenges were anticipated. Soldiers who had been participating partners were now expected to lead the fight on behalf of the Afghan government. Col Millen, as the 455th AEW

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RC-South was the biggest recipient of US Army Aerostat balloons, with more than half of those in Afghanistan flying above FOBs in the region. Known as the Persistent Threat Detection System (PTDS), the balloons became an important element in A-10 missions. JTACs using the PTDS surveillance system, which was similar to that fitted to the Predator UAV, were able to call in air strikes from the security of their FOB *(US Army)*

Operations Group CO at Bagram, was witness to the 'growing pains' being suffered by an army trying to stand on its own. 'The biggest challenge had to do with attempting to support ANA missions, and these mission were increasingly unilateral ANA operations', Millen explained. 'We'd have JTACs working from a FOB supporting these operations. It could be as basic as a guy with a cell phone talking to someone else. There was a senior officer with the JTAC at the FOB helping make decisions whether to employ ordnance or not. And a lot of this had to do with whether or not they trusted the person making the request for fire support, as the JTACs had met most of the ANA personnel they'd be working with.

'The tactical direction instigated by Gen McChrystal in 2009 remained firmly in place until after I had left. The biggest change that I saw was that there were fewer and fewer US forces out taking the lead in the fighting as 2013 progressed. In most cases US forces were doing what our mission had now become – training ANA troops and supporting them in action. An Afghan face needed to be put on this fight – there was a growing emphasis placed on this as the year progressed. As part of this process we closed a lot of FOBs and sent people home. RC-East still had a decent fighting season, and although ISAF drew down the FOBs in that command, SOF continued doing what SOF does. Nevertheless, the conventional army presence became smaller and smaller.

'One of the things we stressed in-theatre when performing CAS was that if there was an issue or incident, and there were civilian casualties somewhere on the battlefield, the current Afghan government would be calling directly to Washington, DC before the pilots involved had even landed or were able to up-channel their side of the story. Our guys needed to understand that in today's context there wasn't a single bomb that was going to win this fight, but there was a single bomb that was going to have a significant negative impact on what we were trying to achieve.'

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Lt Col David Rayman gathers his kit as he prepares to exit his aircraft (78-0697) after landing at Lajes Field, in the Azores, on 24 September 2013. The flight represented the first step in a week-long journey from Moody AFB, Georgia, to Bagram AB, where the 75th EFS would probably become the last active-duty A-10 unit to conduct combat operations during OEF *(USAF)*

Groundcrew load rockets into the LAU-131 launcher on station two of a 75th EFS A-10C on 10 February 2014. Below the launcher hanging from station three is an AGM-65L Maverick missile. The laser-guided weapon, while used heavily in the initial stages of OEF as a 'poor man's FLIR', had begun to be more frequently employed as a weapon in its own right by A-10s based at Bagram from 2013. The AGM-65L can be guided by the launching aircraft, a ground unit or by other airborne platforms, and is capable of hitting small, fast targets. This is precisely why the veteran weapon returned to favour *(USAF)*

In the first week of October 2013 the 75th EFS arrived at Bagram AB to replace the 74th EFS, ending the latter unit's six-month combat deployment as part of OEF. The CO of the 75th EFS was Lt Col David Rayman, and his 12 A-10s would almost certainly be the last active-duty jets to make the trek to Afghanistan prior to the scheduled withdrawal of US forces at the end of 2014.

While the number of kinetic events has decreased as a direct result of fewer US forces operating in the country, the A-10's role had not changed

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since the first 'Hogs' arrived for OEF duty in March 2002. 'The mission is the same – CAS, CSAR and dynamic targeting', Lt Col Rayman recalled when interviewed at Bagram. 'Much of our time is spent providing armed overwatch to FOBs or undertaking NTISR. Our task, and our purpose, is to aid security, freedom of movement and freedom of action for both NATO and Afghan forces. As a squadron we are still conducting 24-hour operations. When my first flight of the day takes off, the last flight from the previous day is landing.

'We are nearing the end of the mission in Afghanistan. The current operational phase is that of transferring authority to the Afghan Security Forces. They need to be able to defend themselves. The more we do it for them the less they'll learn. Weapons employment is a last resort in many cases, with the exception of self-defence and the inherent right to protect Coalition forces. It's better to find a non-kinetic solution if the situation is manageable in that regard.'

On 25 February 2014, with less than two months left of the 75th EFS's OEF deployment, Secretary of Defense Chuck Hagel confirmed one of the worst kept secrets in Washington, DC. The USAF was going to retire the A-10. Once again, the air force was planning to withdraw an aircraft it had never wanted in an effort to save $3.5 billion in operating costs over five years. Hagel pointed out that the aircraft's age was becoming a huge factor in its continued viability as a frontline asset. The cost of keeping the jet serviceable was becoming prohibitive. Furthermore, according to the Secretary of Defense, the latest precision munitions could now be employed just as effectively in the CAS role by other, more modern USAF aircraft. Hagel had also been persuaded by senior air force officers that the A-10, owing to its Cold War-era design, was now highly vulnerable to modern air defences – both ground-to-air and air-to-air.

Without the distinctive 'Flying Tigers' heritage sharksmouth display, A-10C 79-0193 passes through 'last chance' in preparation for launch from Bagram AB in February 2014. The aircraft had been operated by the 107th FS of the Michigan ANG before transferring to the 75th FS at Moody AFB *(USAF)*

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A-10C 79-0193 slides away from the tanker at dusk above Afghan farmland in the spring of 2014. The pilot can be seen wearing the new helmet-mounted integrated targeting system (HMCS) that was introduced in early 2013 *(USAF)*

The 75th EFS returned to Moody AFB during the third week of April 2014 and was replaced by the 303rd EFS of the AFRes. In an unprecedented move, the reserve unit shouldered the entire deployment, rather than sharing the mission with another reserve or ANG squadron. The 303rd was led by Lt Col Bryan Stone, who, in a letter he sent to the families of the airmen under his command in August 2014, stated that the squadron had already flown 1450 sorties totalling more than 5500 hours during the first four months of its scheduled seven-month deployment. The 303rd had supported more than 580 JTARs and 250 TICs, and expended 26,000 lb of ordnance and more than 25,000 rounds of 30 mm ammunition. The 303rd EFS returned to Whiteman AFB on 26 October.

The Indiana ANG's 163rd EFS of the 122nd FW would replace the 303rd in Afghanistan, the unit making its first deployment with the A-10C since completing the conversion from the F-16C in 2012. The 12 'Hogs' landed at Bagram AB during the second week of October and immediately began providing support from the skies of Afghanistan. However, there were many questions hanging over this deployment, primarily in respect to its length, as the American military commitment to OEF was quickly approaching its conclusion. Less than one month into the deployment, the 163rd EFS personnel would find themselves packing up and leaving Bagram AB, thus bringing to an end almost 13 years of combat operations for the A-10 in OEF.

The squadron was not heading back to Fort Wayne, Indiana, however. Instead, it was being redeployed to Ahmed Al Jaber AB, in Kuwait, from where, in 2002, the first A-10s had deployed in support of OEF. Now, the 163rd was part of the newly named Operation *Inherent Resolve*, which had been instigated by the US government and its allies to undertake combat operations against ISIS (Islamic State of Iraq and Syria). ISIS had emerged as a serious and fanatical threat in 2012 during the early

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The 303rd EFS left Afghanistan in October 2013, its place at Bagram being taken by the 163rd EFS of the Indiana ANG – the latter unit was making its first A-10C deployment following conversion to the jet from the F-16C in 2012. Less than one month into the deployment, the 163rd EFS personnel would find themselves packing up and leaving Bagram, thus bringing to an end almost 13 years of combat operations for the A-10 in OEF *(USAF)*

stages of the civil war in Syria. The group is dedicated to wholesale slaughter in its quest to reestablish an Islamic State, or caliphate, in the Middle East. Significant military victories by ISIS over the fledgling Iraqi Army had nearly brought Iraq to its knees, and air strikes led by the United States were initiated to stem the advance.

Despite the A-10 being in the vanguard of combat missions over Iraq and Syria against ISIS, the fight to retire it is still simmering within the USAF. Indeed, the air force will try again to eliminate the jet in the Fiscal Year 2016 budget proposal, reiterating that the A-10 is nothing more than a single-mission aircraft, and funding and manpower needs to be redirected to ensure modernisation continues. In a failed attempt to pursue an agenda of marginalisation, Secretary of the Air Force Deborah Lee James pointed out in a speech on 15 January 2015 that since Operation *Inherent Resolve* had begun in August, the A-10 had only participated in 11 per cent of the combat missions flown. Conversely, F-16s had flown 41 per cent of the sorties completed and F-15E Strike Eagles 37 per cent. However, one very important caveat was left out of her address. Unlike the other types mentioned, which had been in-theatre from the very start of *Inherent Resolve*, the A-10 had only been flying combat missions since the middle of November.

In simple terms, despite claims that the aircraft is obsolete and vulnerable over a modern battlefield, the 'Hog' has been flown very hard over Iraq and Syria. Indeed, its performance in the CAS mission has been unmatched by other types involved in the campaign.

With the A-10 having now seemingly ended its commitment to OEF, the emotions evoked by almost 13 years of combat are strong – particularly from soldiers and Marines who are here today for no other reason than a

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'Hog' pilot flew into harm's way to ensure their survival. Looking back at the OEF mission, Lt Col Rayman had this to say about what it meant to fly the jet;

'I'm fortunate to have had an opportunity to command an A-10 squadron in combat. Few of us have had that privilege. I understand it's possible that OEF could be the swansong for the A-10 community. That's irrelevant to me. I know my pilots and airmen are proud of what they've accomplished in Afghanistan, and they're even more proud to have been a part of OEF while serving in an A-10 unit, as was I.

'I went to Afghanistan with the jet four times. As an A-10 pilot, I believe we performed two of the most important missions in the USAF whilst in-theatre – CAS and CSAR. These missions are our heart and soul, our reason for existence. When the A-10 retires, our community and expertise will be diluted. It's a risky proposition. These highly trained CAS and CSAR professionals need to be transplanted into other communities. We must prevent the CAS mission from becoming a footnote in USAF Counterland Doctrine.

'I believe the A-10 itself is the most endearing aircraft of any foot soldier, Marine or special operator. The aircraft, its pilots and maintainers have done more than their share of the task. It accomplished more than it was ever designed to do. The A-10 is a complete weapons system and is extremely lethal in the hands of a capable pilot.'

'What we do as A-10 pilots', Rayman added, 'is dignified only by those whom we support. We have earned their complete trust.'

Half of the deployed A-10Cs from the 163rd FS/122nd FW of the Indiana ANG are seen here shortly after their arrival at Ahmed Al Jaber AB, Kuwait, on 17 November 2014, the aircraft having flown in directly from Bagram AB in Afghanistan. Simultaneously ending A-10 combat operations in OEF after more than 12 years and beginning perhaps a final chapter in A-10 combat history, the 'Hogs' were assigned to the 332nd AEG and almost immediately commenced combat operations against ISIS in Iraq and Syria *(USAF)*

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APPENDICES

A-10 THUNDERBOLT II OEF DEPLOYMENTS 2008-14

172nd EFS (A-10C), Bagram AB, November 2007 to January 2008
78-0717 (MD), 78-0683 (MD), 78-0637 (MD), 79-0087 (MD), 78-0705 (MD), 80-0255 (BC), 80-0257 (BC), 81-0975 (BC), 81-0994 (BC)

81st EFS (A-10A), Bagram AB, January 2008 to May 2008
79-0207 (SP), 80-0281 (SP), 81-0945 (SP), 81-0951 (SP), 81-0952 (SP), 81-0963 (SP), 81-0966 (SP), 81-0978 (SP), 81-0983 (SP), 81-0984 (SP), 81-0992 (SP), 82-0649 (SP)

103rd EFS and 303rd EFS (both A-10A+), Bagram AB, May 2008 to September 2008
78-0655 (KC), 79-0093 (KC), 79-0119 (KC), 79-0123 (KC), 80-0230 (PA), 80-0273 (PA), 81-0981 (PA), 82-0659 (PA), 78-0611 (ID), 78-0627 (ID), 78-0653 (ID), 80-0250 (ID)

75th EFS (A-10C), Bagram AB, September 2008 to January 2009
78-0674 (FT), 78-0679 (FT), 78-0697 (FT), 79-0138 (FT), 79-0172 (FT), 79-0179 (FT), 79-0186 (FT), 79-0192 (FT), 80-0140 (FT)*, 80-0149 (FT)*, 80-0178 (FT), 80-0226 (FT)
*Flown to Spangdahlem for inspection and replaced by:
79-0135 (FT), 80-0272 (FT), 80-0144 (FT), 80-0252 (FT), 80-0657 (FT), 81-0944 (FT)

74th EFS* (A-10C), Bagram AB, January 2009 to July 2009
78-0596 (FT), 78-0598 (FT), 78-0600 (FT), 81-0964 (FT), 81-0967 (FT), 81-0979 (FT), 82-0664 (FT)
*Personnel-only swap, with airframes remaining at Bagram. On 3 May 2009 four ex-75th EFS airframes – 78-0679, 79-0138, 79-0179 and 80-0144 – returned to Moody AFB

354th EFS (A-10C), Kandahar Airfield, July 2009 to January 2010
78-0684 (DM), 78-0709 (DM), 79-0202 (DM), 80-0142 (DM), 80-0150 (DM), 80-0179 (DM), 80-0246 (DM), 80-0280 (DM), 81-0948 (DM), 81-0950 (DM)

104th EFS and 184th EFS (both A-10C), Kandahar Airfield, January 2010 to May 2010
78-0640 (MD), 78-0682 (MD), 78-0702 (MD), 78-0719 (MD), 78-0720 (MD), 79-0082 (MD), 79-0165 (MD), 78-0613 (FS), 78-0646 (FS), 78-0659 (FS), 79-0129 (FS), 80-0166 (FS)

81st EFS* (A-10C), Kandahar Airfield, May 2010 to September 2010
80-0275 (SP), 81-0945 (SP), 81-0963 (SP), 81-0976 (SP), 81-0980 (SP), 81-0985 (SP), 81-0991 (SP), 82-0649 (SP), 82-0654 (SP), 82-0656 (SP)
*Two A-10Cs from the 190th FS – 78-0703 (ID) and 79-0194 (ID) – were transferred to Kandahar. They departed for Boise on 26 July 2010

75th EFS (A-10C), Kandahar Airfield, September 2010 to March 2011
78-0596 (FT), 78-0600 (FT), 78-0688* (FT), 79-0139* (FT), 79-0159 (FT), 79-0172* (FT), 79-0206 (FT), 79-0207 (FT), 79-0223 (FT), 80-0172 (FT), 80-0180 (FT), 80-0208 (FT), 80-0223* (FT), 80-0259 (FT), 80-0282 (FT), 81-0947* (FT), 81-0953* (FT), 81-0995 (FT)
*Remained in-theatre for the 74th FS deployment

74th EFS (A-10C), Kandahar Airfield, March 2011 to October 2011
78-0600 (FT), 78-0674 (FT), 78-0688 (FT), 79-0135 (FT), 79-0138 (FT), 79-0172 (FT), 79-0179 (FT), 79-0189 (FT), 80-0144 (FT), 80-0223 (FT), 80-0228 (FT), 80-0272 (FT), 80-0277 (FT), 80-0189 (FT), 81-0947 (FT), 81-0990 (FT), 82-0660 (FT)

107th EFS, 303rd EFS and 47th EFS (all A-10C), Kandahar Airfield and Bagram AB, October 2011 to March 2012
80-0275 (SP), 81-0956 (SP), 81-0965 (SP), 81-0966 (SP), 81-0981 (SP), 81-0985 (SP), 80-0163 (MI), 80-0258 (MI), 80-0262 (MI), 80-0265 (MI), 81-0994 (MI), 81-0998 (MI), 79-0109 (KC), 79-0111 (KC), 79-0119 (KC), 79-0094 (BD), 79-0145 (BD), 79-0154 (BD)

104th EFS and 184th EFS (both A-10C), Bagram AB, March 2012 to October 2012
78-0682 (MD), 78-0683 (MD), 78-0693 (MD), 78-0702 (MD), 78-0719 (MD), 79-0082 (MD), 79-0087 (MD), 79-0088 (MD), 78-0583 (FS), 78-0613 (FS), 78-0614 (FS), 78-0616 (FS), 78-0621 (FS), 78-0639 (FS), 78-0630 (FS), 78-0646 (FS), 80-0166 (FS), 80-0188 (FS)

354th EFS (A-10C), Bagram AB, October 2012 to April 2013
78-0650 (DM), 78-0670 (DM), 78-0706 (DM), 79-0167 (DM), 79-0178 (DM), 79-0196 (DM), 79-0198 (DM), 80-0147 (DM), 80-0169 (DM), 80-0187 (DM), 80-0197 (DM), 80-0203 (DM), 80-0210 (DM), 80-0212 (DM), 81-0974 (DM), 81-0997 (DM), 82-0648 (DM), 82-0662 (DM)

74th EFS (A-10C), Bagram AB, April 2013 to October 2013
80-0275 (SP), 81-0960 (SP), 81-0962 (SP), 81-0980 (SP), 81-0981 (SP), 81-0983 (SP), 82-0646 (SP), 82-0650 (SP), 78-0597 (FT), 79-0192 (FT), 79-0207 (FT), 80-0194 (FT), 80-0252 (FT), 80-0272 (FT), 81-0964 (FT), 81-0990 (FT), 82-0657 (FT), 82-0660 (FT)

75th EFS (A-10C), Bagram AB, October 2013 to April 2014
78-0597 (FT), 78-0644 (FT), 78-0674 (FT), 78-0697 (FT), 79-0139 (FT), 79-0193 (FT), 80-0140 (FT), 80-0194 (FT), 80-0208 (FT), 80-0226 (FT), 80-0241 (FT), 80-0256 (FT)

303rd EFS (A-10C), Bagram AB, April 2014 to October 2014
78-0631 (KC), 79-0090 (KC), 79-0093 (KC), 79-0111 (KC), 79-0113 (KC), 79-0117 (KC), 79-0119 (KC), 79-0122 (KC), 79-0136 (KC), 79-0152 (KC), 80-0201 (KC), 82-0653 (KC)

163rd EFS (A-10C), Bagram AB, October 2014
78-0626 (IN), 78-0658 (IN), 78-0659 (IN), 78-0692 (IN), 79-0095 (IN), 79-0185 (IN), 79-0215 (IN), 80-0152 (IN), 80-0177 (IN), 80-0191 (IN), 80-0214 (IN), 80-0267 (IN)

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COLOUR PLATES

1
A-10C 80-0255 of the 172nd EFS/455th AEW, Bagram AB, Afghanistan, January 2008

Delivered to the USAF on 31 March 1982, A-10A 80-0255 was initially based at Eielson AFB, in Alaska, with the 'Blue Foxes' of the 18th TFS/343rd TFW. The jet remained with the unit until May 1991, when most of its A-10s were sent to the Michigan ANG's 172nd FS/110th FG. The squadron was based at Kellogg ANG Base in Battle Creek, Michigan, and the A-10s replaced the 172nd's OA-37 Dragonflies, which the unit had flown for the previous decade. In 1995 the 110th FG became the 110th FW. In mid-2007 the 172nd FS became only the second unit to receive the improved A-10C, and 80-0255 deployed with the squadron that autumn – initially to Iraq and then on to Afghanistan, marking the variant's first combat deployment. As a result of BRAC 2005, the Battle Creek jets were transferred to fellow Michigan ANG unit the 107th FS/127th Wing in December 2008.

2
A-10C 81-0975 of the 172nd EFS/455th AEW, Bagram AB, Afghanistan, January 2008

This A-10 was also delivered new to the 18th TFS/343rd TFW, reaching Eielson AFB in December 1982. It too was duly transferred to the Michigan ANG's 172nd FS/110th FG in 1991. Finally, following 17 years of service with this unit the aircraft was transferred to the 107th FS/127th Wing as part of the 2005 BRAC; 81-0975 still serves with the unit at the time of writing.

3
A-10C 78-0705 of the 172nd EFS/455th AEW, Bagram AB, Afghanistan, January 2008

Accepted by the USAF on 18 March 1980, 78-0705 was assigned to the Maryland ANG's 104th TFS/175th TFW – the first ANG unit to receive the A-10. The 175th was re-designated the 175th FW in 1992 and then the 175th Wing four years later. During 2007 the 175th (along with the 110th FW) was the first unit to transition to the A-10C. One of five C-models sent to Iraq by the 104th to operate alongside three 'Hogs' from the 172nd FS in a combined expeditionary unit and flown by Maryland ANG pilots in OIF, 78-0705 was manned by 172nd FS pilots once transferred to Afghanistan. It currently remains with the Maryland ANG, having spent its entire service life with the 104th.

4
A-10A 81-0952 of the 81st EFS/455th AEW, Bagram AB, Afghanistan, March 2008

A-10A 81-0952 was delivered to USAFE's 510th TFS/81st TFW at RAF Bentwaters, in Suffolk, on 18 October 1982. It would subsequently spend much of its service life overseas, leaving Bentwaters for Spangdahlem AB, in Germany, in July 1992 when it was transferred to the 81st FS/52nd FW. One of 12 A-models sent by the squadron to Bagram in January 2008, it remained in-theatre until May of that year – these were the last unmodified 'Hogs' to see combat – and was assigned to its first US-based unit in October 2009 when the jet joined the 357th FS/355th FW at Davis-Monthan AB, Arizona. This squadron is an A-10 Operational Training Unit, providing tuition for students and instructor pilots alike.

5
A-10A+ 78-0655 of the 303rd EFS/455th AEW, Bagram AB, Afghanistan, June 2008

A-10A 78-0655 was accepted by the USAF on 29 October 1979 and issued to the 354th TFW at Myrtle Beach AFB, South Carolina. During its time with the wing the aircraft served with two squadrons, the 355th and 356th TFSs. Following the closure of Myrtle Beach in 1993, the aircraft was reassigned to Pope AFB, North Carolina, to serve with the 75th FS/23rd Wing. It would spend nearly a year there before moving to Shaw AFB, South Carolina, to serve with the 55th FS/20th FW. In April 1997 78-0655 moved south to NAS New Orleans to be operated by the 706th FS of the AFRes. Eleven years later the A-10 was transferred to the 303rd FS/442nd FW at Whiteman AFB, the jet remaining with the AFRes unit at the time of writing.

6
A-10A+ 82-0659 of the 103rd EFS/455th AEW, Bagram AB, Afghanistan, July 2008

The USAF took delivery of 82-0659 on 6 December 1983 and immediately assigned it to the 511th TFS/81st TFW at RAF Bentwaters, where it would remain until May 1989. With the realignment of RAF Alconbury, two A-10 squadrons – the 509th and 511th TFSs – would transfer there from RAF Bentwaters. Deployed to Sembach AB, Germany, in July 1990 as part of a regular detachment, 82-0659 would not return to England, however, being assigned instead to the Pennsylvania ANG's 103rd TASS/111th Tactical Air Support Group (TASG) at NAS Willow Grove. The 111th TASG would become the 111th FW and 82-0659 would serve with it until the 103rd FS was deactivated by BRAC 2005 in March 2011 (the unit had lost its A-10s in 2010). Having been moved to Davis-Monthan AFB in November 2010, 82-0659 subsequently became the last aircraft to wear 358th FS markings prior to the squadron's deactivation in February 2014 as part of the USAF's Total Force Initiative policy.

7
A-10A+ 80-0250 of the 190th EFS/455th AEW, Bagram AB, Afghanistan, August 2008

This aircraft began its service life with the 25th TFS/51st TFW at Suwon AB, Republic of Korea, in November 1982. The next stop for 80-0250 was the 23rd TFW at England AFB, Louisiana, where the jet remained for approximately four months before shifting bases again. It was next assigned to the 103rd TASS of the Pennsylvania ANG at NAS Willow Grove, where it would remain until 1996 when the aeroplane was assigned to the 103rd FS/111th FW. The A-10 was subsequently transferred to another ANG unit, this time the Idaho ANG's 190th FS/124th FW, with whom it is still in service at the time of writing.

8
A-10C 79-0186 of the 75th EFS/455th AEW, Bagram AB, Afghanistan, December 2008

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This A-10 was first delivered to the 76th TFS/23rd TFW at England AFB on 29 January 1981. Nine years later 79-0186 was one of 48 'Hogs' to deploy to King Fahd International Airport, Saudi Arabia, initially in support of Operation *Desert Shield* and then *Desert Storm*. Following combat over Iraq, the 23rd TFW was deactivated and 79-0186 was moved to Shaw AFB, where it served with the 21st FS/20th FW. Transferred to Pope AFB to join the 75th FS/23rd FG, the jet later moved with the group to Moody AFB. Its service with the 23rd Wing came to an end when the 75th completed its OEF deployment in January 2009, 79-0186 having since been assigned to the 57th Wing's 66th Weapons School at Nellis AFB, Nevada.

9
A-10C 78-0684 of the 354th EFS/451st AEW, Kandahar Airfield, Afghanistan, October 2009

Delivered to the USAF on 26 October 1980, this A-10 was immediately assigned to the New York ANG's 138th TFS/174th TFW. It duly flew the jet from Hancock Field for eight years, before sending the 'Hog' to the Wisconsin ANG's 176th TFS/115th TFW at Truax Field ANG Base. The jet remained with the squadron until the autumn of 1992, when the 176th commenced its transition to the F-16C/D. In October of that year 78-0684 departed for Davis-Monthan AFB, where it joined the 354th FS/355th FW. On 5 January 1993 this aircraft, together with 25 other A-10s, transferred to McChord AFB, Washington State, as a geographically separated unit of the 355th Wing. This move only lasted only until October 1994, when the A-10 returned to Davis-Monthan AFB. It has continued to serve with the 354th FS ever since.

10
A-10C 79-0202 of the 354th EFS/451st AEW, Kandahar Airfield, Afghanistan, October 2009

Accepted on 24 February 1981, 79-0202 was initially assigned to the 74th TFS/23rd TFW at England AFB. The aircraft served with the wing until April 1992, when it was transferred to the 355th FW at Davis-Monthan AFB, and it has remained with the 355th FW ever since, moving between its three assigned A-10 squadrons. Although 79-0202 was being flown by personnel from the 354th FS during its 2009 OEF deployment, it was actually a 357th FS jet – note the 'Dragons' unit emblem on the fuselage and pilot nameplate.

11
A-10C 78-0719 of the 104th EFS/451st AEW, Kandahar Airfield, Afghanistan, February 2010

This aircraft has spent its entire career with the Maryland ANG, having joined the 104th TFS/175th TFG on 8 April 1980 when A-10s began replacing the A-37Bs that had previously equipped the group. Today, it is assigned to the 104th FS/175th Wing, and it remains active at the time of writing.

12
A-10C 79-0129 of the 184th EFS/451st AEW, Kandahar Airfield, Afghanistan, May 2010

Accepted by the USAF on 21 August 1980, 79-0129 was delivered to the 355th Tactical Training Wing at Davis-Monthan AFB. The aircraft was transferred to the 354th TFW at Myrtle Beach in 1982 and remained here until it joined the Pennsylvania ANG's 103rd TASS in 1990. Three years later, the A-10 was assigned to the Michigan ANG's 172nd FS/110th FW at Battle Creek. In 2004 the A-10 moved again to the Massachusetts ANG, where it served for two years with the 131st FS/104th FW and was at one point named *City of West Springfield*. After BRAC changed the 104th FW's mission, the aircraft moved to the Arkansas ANG's 184th FS/188th FW in April 2007. Five years later, and after yet another BRAC closure, A-10C 79-0129 transferred to Moody AFB and the 74th FS/23rd FG, where it remains today.

13
A-10C 79-0194 of the 81st EFS/451st AEW, Kandahar Airfield, Afghanistan, August 2010

Delivered to the USAF on 11 February 1981, 79-0194's first assignment was at Nellis AFB as part of the 57th Fighter Weapons Wing's 66th Fighter Weapons Squadron. The jet was subsequently transferred to the 23rd TFW at England AFB, where it remained until May 1992. Its next stop was with the Maryland ANG's 175th FW until 1994, when the A-10 moved to the Idaho ANG's 190th FS/124th FW. This aircraft, together with 78-0703 from the 190th FS, was 'surged' to support the 81st EFS deployment in the summer of 2010 as more A-10s were needed to handle increased combat operations. Having departed the 190th's Boise base on 26 July 2010 for Kandahar Airfield, 79-0194 is still serving with the unit at the time of writing.

14
A-10C 80-0223 of the 74th EFS/451st AEW, Kandahar Airfield, Afghanistan, April 2011

Accepted into the USAF in late 1981, this A-10 was first assigned to the 76th TFS/23rd TFW at England AFB. During operations *Desert Shield* and *Desert Storm* 80-0223 flew combat missions from King Fahd International Airport. After returning to the United States, the jet continued to serve with the 23rd FG, initially at Pope AFB and then at Moody AFB. At the time of writing the aircraft remains assigned to the 23rd FG, currently serving with the 75th FS.

15
A-10C 80-0258 of the 107th EFS/451st AEW, Kandahar Airfield, Afghanistan, October 2011

Delivered to the USAF on 6 April 1982, 80-0258 was initially assigned to the 18th TFS/343rd TFW at Eielson AFB. In May 1991 the aircraft was passed on to the 172nd FS/110th FW of the Michigan ANG at Battle Creek. The jet spent nearly 18 years with the 172nd FS and deployed with the unit to OIF in 2003. During a combat mission over Baghdad on 8 April 2003, 80-0258 was struck in the right engine by an enemy shoulder-launched surface-to-air missile, causing extensive damage. Having taken off from Ahmed Al Jaber AB, Kuwait, the aircraft was forced to land at Tallil AB in southern Iraq. It would remain with the unit until January 2009, when 80-0258 became the last aircraft to leave Battle Creek for Selfridge AFB and the 107th FS/127th Wing, which is also assigned to the Michigan ANG.

16
A-10C 79-0145 of the 107th EFS/451st AEW, Kandahar Airfield, Afghanistan, November 2011

A-10C 79-0145 has spent its entire life with the AFRes's 47th FS, initially with the 47th TFS/917th FG at Barksdale AFB, Louisiana. Delivered new to the unit on 10 October 1980, it remained with the 47th until BRAC forced the squadron's deactivation and the aircraft's transfer in January 2011. The 47th FS would reactivate in December 2013 at Davis-Monthan AFB as an A-10 formal training unit, and 79-0145 is still assigned to the 47th FS today. It was one of three

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A-10Cs supplied by the squadron to the joint 'Hog' OEF 2011-12 deployment undertaken by the 107th, 303rd and 47th FSs, 79-0145 being nicknamed *Hairless Joe* and adorned with appropriate artwork from Al Capp's *Li'l Abner* comic strip on its lower fuselage whilst in-theatre.

17
A-10C 80-0265 of the 303rd EFS/455th AEW, Bagram AB, Afghanistan, January 2012

The USAF took delivery of 80-0265 on 12 May 1982 and the jet was assigned to the 18th TFS/343rd TFW at Eielson AFB. The aircraft served in Alaska until May 1991, when it was transferred to the Michigan ANG's 172nd FS/110th FW at Battle Creek, and 80-0265 remained with the unit until it was transferred to Selfridge AFB to join the 107th FS/127th Wing as a result of BRAC in January 2011. It was one of seven A-10Cs supplied by the 107th to the joint 'Hog' OEF 2011-12 deployment, and it remains with the unit at the time of writing.

18
A-10C 79-0154 of the 47th EFS/455th AEW, Bagram AB, Afghanistan, February 2012

This aircraft has been with the 47th FS since it was delivered to the AFRes on 10 October 1980, flying for many years from Barksdale AFB. Initially the 47th TFS, the unit was re-designated the 47th FS on 1 February 1992. The unit changed from being a combat-coded squadron to an A-10 training unit, back to a combat-coded squadron and now, once again, reverting to its training role at Davis-Monthan AFB, and 79-0154 has been a constant fixture throughout these changes. During the 2011-12 joint 'Hog' OEF deployment the aircraft also received Al Capp-inspired comic strip artwork when it was nicknamed *Evil Eye Fleegle* and adorned with appropriate artwork on the lower left side of its fuselage.

19
A-10C 80-0188 of the 184th EFS/455th AEW, Bagram AB, Afghanistan, November 2012

When it was delivered to the USAF on 1 September 1981, 80-0188 was first assigned to England AFB. As part of the 76th TFS/23rd TFG, the jet was one of the group's A-10s deployed in support of Operation *Desert Shield* and Operation *Desert Storm*. While in theatre, 80-0188 flew missions from King Fahd International Airport. Upon returning to England AFB, the decision was made to close the base and the 'Hog' was transferred to the AFRes and sent to Richards-Gebaur ARS outside Kansas City, Missouri, in June 1992. There, the aircraft was assigned to the 303rd FS/442nd FW, where it remained for three years. In May 1995 the A-10 was transferred to another AFRes unit, the 706th FS at NAS New Orleans. In April 2008 the jet was passed on to the 184th FS/188th FW of the Arkansas ANG at Fort Smith. Four years later the squadron sent 375 personnel and ten aircraft (including 80-0188) to Bagram for a joint OEF deployment with the 104th FS. With the 188th FW having its jets replaced by MQ-9 Reaper UAVs during the summer of 2014, in June of that year 80-0188 moved to the 74th FS/23 FG at Moody AFB, where it is still active.

20
A-10C 82-0662 of the 354th EFS/455th AEW, Bagram AB, Afghanistan, January 2013

The fourth to last A-10 delivered to the USAF, 82-0662 was accepted on 27 February 1984 at England AFB as part of the 23rd TFW. During Operation *Desert Storm* this A-10 flew 30 missions with the 353rd TFS/354th TFW, having joined the wing during the deployment. Following the closure of England AFB in 1992, 82-0662 transferred to the 355th Wing at Davis-Monthan AFB, where it has remained to this day.

21
A-10C 82-0660 of the 74th EFS/455th AEW, Bagram AB, Afghanistan, July 2013

Accepted on 27 February 1984, 82-0660 was initially assigned to the 355th TFS/354th TFW at Myrtle Beach AFB. The aircraft moved to the 356th TFS in 1989 and remained at Myrtle Beach AFB until it was closed in 1992. Transferred to the 23rd Wing at Pope AFB and then moving with the wing to Moody, it was one of ten A-10Cs deployed by the 74th FS to Bagram in 2013. Upon returning from Afghanistan in October 2013 the jet became the flagship of the 76th FS at Moody, this AFRes-manned associate unit being assigned to the 476th FG, which is in turn linked to the active duty 23rd Wing.

22
A-10C 81-0981 of the 74th EFS/455th AEW, Bagram AB, Afghanistan, September 2013

Delivered to the USAF on 18 January 1983, this aircraft's first assignment was with the 81st TFW at RAF Bentwaters, where it displayed wing flagship markings. Moving to RAF Alconbury as part of the 511th TFS, the jet was then assigned to the 103rd TASS of the Pennsylvania ANG until March 2010, when it joined the 52nd FW at Spangdahlem to serve with the 81st FS. The squadron adorned all of its jets with the historic 'Panther' emblem on their engine nacelles in the lead-up to deactivation. The aircraft were transferred to the 74th FS at Moody AFB in February 2013, and the unit had no time to remove the 81st FS markings prior to commencing its OEF deployment two months later – the 74th EFS took eight SP-marked jets to Bagram in April 2013.

23
A-10C 78-0697 of the 75th EFS/455th AEW, Bagram AB, Afghanistan, February 2014

The 355th TFW took delivery of 78-0697 at Davis-Monthan AFB on 18 March 1980. The aircraft's first assignment was with the 357th FS and then the 356th FS. In August 1992 the jet was transferred to Pope AFB to join the 23rd Wing. It later moved with the unit to Moody AFB, where it currently serves with the 75th FS.

24
A-10C 79-0122 of the 303rd EFS/455th AEW, Bagram AB, Afghanistan, April 2014

Delivered to the USAF's 81st TFW at RAF Bentwaters on 13 August 1980, 79-0122 was assigned to the 510th TFS for just over two years, leaving England in October 1982. It was subsequently transferred to the AFRes and the 303rd TFS/442nd FW, and it has remained with the unit ever since.

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Front Cover

On the afternoon of 5 January 2012, Capt Joseph Hext and his wingman, Lt Col Joshua Ruddell, of the 303rd EFS departed Kandahar Airfield for an OEF combat mission. The A-10 pilots had originally been assigned a Joint Tactical Air Request not far from their base, but shortly after taking off Capt Hext (in A-10C 81-0985) had received information of a troops-in-contact (TIC) situation that they were being tasked to support. The two pilots duly headed for Kunar Province, in northeastern Afghanistan. When the two pilots arrived in the target area they found nearby mountain peaks obscured by cloud cover from a winter storm that had settled over a river valley in which the troops were patrolling. A SOF team on the ground had been engaged by insurgents, and it was now involved in a firefight with the enemy. One particular fighting position occupied by the Taleban was preventing the troops from egressing the area, so the SOF team's JTAC requested that the A-10s target it. The soldiers were also wary of the possibility of 'squirters' – enemy fighters who might survive the bomb blast and try to escape.

The pilots devised a plan to meet all the concerns of the JTAC. Lt Col Ruddell would drop a 500 lb GBU-38 JDAM on the fighting position once the battle check was completed and the target's coordinates had been passed to him. Circling at 22,000 ft, Lt Col Ruddell would be above the cloud layer and unable to see the target four miles below him. Capt Hext, three miles in trail of Lt Col Ruddell, would penetrate the cloud base and fly up the valley in order to maintain a visual on the target. With his Litening II targeting pod fixed on the fighting position to be bombed, Capt Hext would be able to see any 'squirters' and immediately engage them with his jet's 30 mm cannon.

Unable to penetrate the cloud layer directly overhead of the target, Capt Hext, as the flight lead, flew down the valley from the TIC until he found a break in the undercast. Cautiously descending, he slowly worked his way through the clouds and then flew his A-10 back up the valley in the direction of the target area. As Capt Hext closed to within three miles of the fighting position, the JDAM, which Lt Col Ruddell had already released, impacted directly on the target. Using the Litening II pod to scour the area, Capt Hext overflew the impact point but found no surviving enemy fighters. He then turned the A-10 around within the valley and flew out the same way he had come in – above him, Lt Col Ruddell performed a similar manoeuvre. Finding another break in the clouds, Capt Hext then commenced his ascent to rejoin his wingman

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